Vol 7 No 8

August $3.50*

The Australian COMMODORE and AMIGA REVIEW

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The Australian COMMODORE and Amiga Review

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Sierra game lovers are in for a real treat with this one. Set mainly on a nuclear submarine, this is one of Sierra's best. Don't miss this one.

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Another great title from Sierra. This time presented in the form of a play where you have to solve the murder before the final curtain falls.

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From the makers of Populous comes this superb platform game. Excellent graphics with very cute characters and plot. But watch the rising water level.

LAST NINJA II
This now famous C64 game makes it to the Amiga with fabulous graphics and sound. An arcade Ninja game that is really an adventure strategy game as well.

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Editorial

DURING the recent World Conference on Computers in Education, and the Sound and Vision Show - both held in Sydney - Kailash Ambwani from Gold Disk and Melissa Jordan Gray from the Blue Ribbon Bakery paid Australia a visit. Both were very impressed with the standard of the Commodore displays at each exhibition, as were the hundreds of visitors who sat in the Hercules Aircraft seats to test out the new Amiga 3000. At the Sound and Vision show, Commodore won the best stand award.

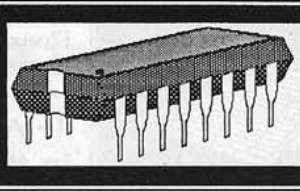
More significantly, during their visit, both Melissa and Kailash were able to come to a distribution agreement with local software distributor, Dataflow. The entire Gold Disk range of over 20 products ranging from *Transcript* and *PageSetter II*, to powerful professional applications such as *ShowMaker* and *Professional Page*, are now fully supported. Upgrade paths for those products where new versions are or have recently been released will be available.

According to Kailish, product support was a critical consideration for Gold Disk. Dataflow were able to provide the needed arrangements to ensure consumers were properly looked after.

Dataflow have made a strong commitment to both the Gold Disk and Blue Ribbon Bakery range. From the sort of feedback we have had to date with regard to products Dataflow currently support, such as *KindWords 2.0*, I am sure we will finally see the right sort of hand holding for new users making the step into serious Amiga productivity. ❑

Andrew Farrell

Ram Rumbles



Commodore in the Media

● A few spottings surfaced in the reader mail this month. The first comes from Matthew Smith of Batlow who saw an Amiga 500 in *Rafferty's Rules*. Several people spotted an Amiga 2000 on *Play School*. Yes, there's a chair in there and an Amiga too! According to Bruce Gilbert of Marangaroo, the Amiga in question was busy drawing a cat. Bruce also spotted a glitch in *Neighbours* where the A500 everyone has seen is often operated with the numeric keypad even though only Workbench is on the screen. Whatever happened to technical direction?

On the 11th of June, *Neighbours* showed an Amiga 500 supposedly infected with a virus! Rumour has it that a paint program was used instead.

On Sydney radio show Club Veg, heard across the air-waves on station 2MMM, snippets of synthesised speech fill the occasional empty moment. As Cooper of Picnic Point surmises this must be the Amiga. Can anyone throw any light on this possibility?

On Sunday, June 3 Channel Nine presented one of its *Earth Watch* shorts. There we saw, according to Darren Healey of South Windsor, an Amiga 500. The machine was operated by a group of school students accessing a world wide network as part of a water monitoring program called, aptly, "Green".

Channel Nine's *A Current Affair*, hosted by Jana Wendt, recently featured a story on a disabled teenager who was using an Amiga as part of his therapy. Although the exact program used wasn't visible, it's good to know the Amiga can help out in situations like that.

Shane Sodeman of Moranbah sent us a wad of information on what Commodore's are up to. According to Shane:
"Dear Andrew/Ram Rumbles

While on the subject of film:

● Amiga 2000s are being used to control the music and timed explosions for the Indiana Jones Spectacular show at the new Disney/MGM amusement park in Florida.

● Again an Amiga 2000 was prominently featured in an episode of *Alf*. Alf uses the Amiga for computer stock trading, with disastrous results.

● The people who made *Airplane* and *Naked Gun* are making a movie called *Dive*. A man by the name of Joe Conti is doing the graphics for the film using the Amiga.

● Cable companies in America use an Electronic Preview Guide using Amiga 1000's and Amiga 500's running *Digi-View* and *Deluxe Paint*.

● A dude called Mike Ribble is great stuff for the movie *Robocop II*. He uses an Amiga 2000 with a Commodore A2620 accelerator card and two Commodore Z052 two meg expansion cards for a total of five megs. It has a C. Ltd Kronos hard disk controller with a 65 meg Seagate hard disk drive, a Samsung Multisync Monitor, and a single floppy. He uses (also) a flicker fixer board and a Super gen genlock. He also adapted *DigiView* to use 35mm lenses for movie professional results. He uses a hoist of graphics programmes to produce the monitor output scenes for the film.

● Again Joe Conti does the graphics for the film *Die Hard*. He reckons he would like to see a graphics board that supports 16 million colours and 2k x 2k resolution.

● Pop artist Pedro "Capt. Draw" Bell has used his C64 in the creation of many videos and album covers for the music industry. His latest is the cover for MCA Record's brandnew *Our Gang Funky* CD/Album. The tiny dancers on the cover are all *Print Master* graphics.

● The Sept/Oct issue of *Youth 89* featured an article on videogame designers Michael and Ron McNally. A photo showed the authors with an A2000 running *The Jetsons*.

Enough? - I got more!"

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Update

I have several times in the past raved on to you about new products, but this time I am going to go overboard! AMOS is the biggest and best product we have ever had and it will be the biggest selling Amiga product in the World within six months. As the only authorised distributor of AMOS in Australia, we intend to give this product even more support (if that were possible) than usual. We have set up an AMOS Users Club which will be the only way for you to get the many Public Domain disks both already written and still to come. Obviously, there will be hot-line service support from the Club for its members as well as newsletters and information on new AMOS products as they become available.

It is important that you understand that unless the AMOS you buy has a PACTRONICS sticker on the box and our numbered membership application form inside the box, you will not be able to join the Club, nor will we be able to give you any support at all. If you have already bought AMOS and it is not a PACTRONICS package, I suggest you return it to your retailer and ask him to replace it for you. By the way, membership is totally FREE. If you have not already bought AMOS and want a demo disk, please write in to Neil Miller (Pactronics, PO Box 101 Rydalmere NSW 2116) enclosing a stamped self addressed envelope and a 3 1/2" disk and we will send you out a demo. Just for your interest, over 20,000 copies of AMOS were sold in the U.K. in the first ten days after its release, and we have already broken our records for sales of any new product on any machine, in the first three weeks.

Although the World Cup is now over, there is still an enormous amount of enjoyment to be gotten from our great new Soccer games - *Emlyn Hughes International Soccer* and the brilliant new *World Cup '90* from Linel in Switzerland. These games have to be seen to be believed!

On the same serious side of your Commodore 64 computers, we are proud to announce that we have released *Newsroom* from Springboard the leading software house in the USA. *Newsroom* really lets your creativity go to town and we also have available three separate clip-art collections to use with it.

Finally, let me return to AMOS and say that an Amiga owner without AMOS is never going to get the true value and performace of the immense capabilites of this computer. See our ad on page 21.

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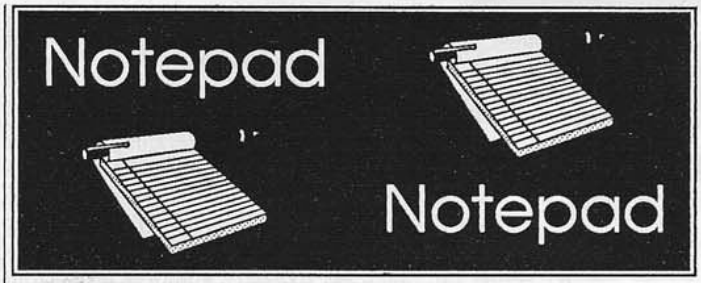

Amiga 3000

● Officially launched at last months SMPTE show in Sydney, the Amiga 3000 will be in stock in limited numbers at major speciality Commodore dealers around about now. Price on the 25Mhz machine will be about $6500 - and a VGA monitor to match will set you back an additional $800-900. The A2024, a new monitor which will display the 1024 x 1024 productivity graphics mode, will be available late this year for around $1800.

2-meg Agnes for A500?

● Looks like a bit of forward design by Commodore - it seems that if you check out the new schematics for the Revision 6 A500, there is a configuration in which the 25Kx4 memory chips can be replaced by 1megx4 chips for a total of 2 meg of chip ram. It seems that Commodore went in for the Rev. 6 design so one-megabit chips could be used instead of the old 256K chips which became scarce for a while. The 1-meg Agnes had to be installed in this machine to let them address the higher-density memories. Since then, however, 256K chips have become cheap again and production has been switched back to the original design.

A3500 tower power

● There always has to be another one in the works, and this one is the 3500... This is for really rich power users, and is a tower arrangement that you stand unobtrusively under the desk. Probably waiting to be fitted with a 68040 CPU, rather than the A3000's standard 68030, it is also said to have more slots available for peripheral cards. Indeed, under way now, with no shipping date available - a 68040 card that can be used with the A3000 when the chip becomes available. It'll move along at 50 MHz, which means about double the speed of the 68030 and almost incomparable with the 68000 which you're probably using right now (!).

SOME GOSSIP

The industry figures

● It seems that the overall entertainment software market in the US fell by 12% in 1989, though Amiga software sales grew more than IBM - all others fell. Amiga is now No. 2 in size in entertainment software over there. Here in Oz and in Europe, Amiga is #1, of course. Electronic Arts in Australia tell us that the battle is on between the Amiga and IBM for most sales of their software - about 10% left over is thrown to such machines as the Mac and Atari.

Dpaint creator

● Dan Silva, the talented creator of *Deluxe Paint*, a program that probably saved the Amiga's bacon in the very early days, has resigned Electronic Arts to go freelance, which I guess means that he will no longer be the one who'll work on *DPaint*. As he was the driving force behind the *DPaint III* upgrade, and as the next thing the program needs is HAM (hold and modify) capability, it'll be interesting to see how Electronic Arts handles the situation.

1-year guarantee in the US

● This seems to be a good move by Commodore US - any Amigas bought this year should have a 1-year rather than a 3-month guarantee, a distinct improvement. Perhaps Commodore OZ will follow suit ...

INTERESTING SOFTWARE

Dynacadd - new caddpackage

● A press release arrived by post recently, very well presented and described. Ditek International's Dyna-CADD is described as "a 2D & TRUE 3D general purpose Computer Aided Design & Drafting software solution for electrical, mechanical, architectural and civil applications". Already available on MS-DOS systems, it will be available for the Amiga in July 1990. Other features:

● sends all or any part of any drawing to all popular plotters, printers, postscript printers, etc.

● full text functions, including use of Compugraphic fonts; contains a full Font Editor and MAKEPLOT program.

● context-sensitive online help

● will also be offered under UNIX.

Screen shots look excellent, with a wide variety of tools and capabilities. Price will be US$995.

No Errors - mapping out errors on hard disks

● This is a local program by local programmer Nic Wilson, responsible for so many useful programs - it will scan a hard disk, find any questionable sectors, and map them out to a harmless place on the disk. All this is automatic, fast and painless. I've seen an American program that does less than this program for much more cost. Only costs $25, and more info from: Nic Wilson Software: Tel: (076) 358522(B.H.)

Quota - Australian job-quoting software

● Written by Robert Glucz, this is the program that won the "Your Computer" Competition for the best Amiga software, set up by Commodore.

It looks like a very useful program for quoting for all kinds of professional jobs - good interface, useful reports, etc. Robert I'm sure would also customise it to suit a particular business, if you made it worth his while. More info from him at 7 Winnifred Cres, Knoxfield, Vic, 3180.

WE editor for visually impaired users

● Haven't seen it, but it sounds like a good idea - it's a line-oriented editor that "speaks" the text when asked, rather than showing it. Includes normal block operations, search/replace, and spelling checker. The X command can be used to execute other programs (such as CLI programs, like DIR, LIST, etc) while running WE and the output can be heard.

Writing your own games

● AMOS, the new Basic-like fully iconised programming language for the Amiga is probably the best bet for writing your own games, though it can go a lot further and handle just about any programming. This is distributed in Australia by Pactronics (02) 748 4700.

Available from Accolade is *Shoot 'Em Up Construction Kit*

for US$19.95. Only needs 512k and a single drive. Get more info from: Tel: 408 2968400 (USA)

And as well, there is "Tailspin" from MicroDeal, though no details are known - if you find out, please let us know. Tel: 313 3345700 (USA)

The reaper copier program / Software from Hell

● Floated in on the fax tide - from Conceptually Advanced Technologies, a copier with public domain text parameter files, meaning you don't have to pay to get the next release of parameter files. Cost US$49.95.

Perhaps more useful, and from the same group, is their suite of programming routines, libraries, and utilities called "Software from Hell" (yeah, I wonder too . . .). All source code is included, libraries provided in Manx format. Cost: US$69.95 More info from: PO Box 3302, Santa Monica, CA 90403.Tel:(213)4521732.

Autoscript - Postscript to Amigaanimation conversion

● Sounds interesting, since it allows you to import *Professional Draw* (and Mac and IBM structured graphics) Postscript files into *Sculpt 4D* and *Turbo Silver*. It means, I guess, that you can use these other programs as 3D object editors for your animation program; and you also get access to Postscript clip art from various machines. Needs 1 meg of ram, and I've seen it advertised by US mail order companies.

Quarterback 4.0

● I've had this for a few weeks now and it is more useful and reliable than ever. I've used it several times without a hitch - it is faster, and provides more information on screen, including available hard disk volumes, graphical display of progress on each disk drive, Print Catalog option in menu, restore full subdirectory option improved, and more. If you've got a hard disk, use it. Central Coast Software, 424 Vista Avenue, Golden, CO 80401 USA Tel: (303) 5261030.

INTERESTING HARDWARE

Quatromegs - 4-meg card for A500 from MAST

● Yet another in a long line of compact quality hardware from this Australian company. Since we haven't got one to review as yet, I'll have to quote from the press release: it goes into the A501 slot underneath the computer, and has a daughter board that goes into the Gary chip socket. It lets you add up to 4.5meg, increased in increments of 512K, using 256x4 DRAM (DIP) chips in sockets. Fully compatible with both Agnes chips, and has a clock and calendar. Prices: $589 with 2 MB installed $869 with 4 MB installed. More info from: MAST P/L, 19-21 Buckland St, Broadway Sydney 2007. Tel: (02) 281 7411.

Amiga Video Terminal (AVT)

● This hardware/software combo lets your machine send and receive high-res colour and b/w pictures, a la dedicated slow-scan and radio facsimile machines, but apparently even better. The idea is that pics are sent as audio tones, unlike modem traffic which is based on a digital technique (not sure of the exact differences! but it's basically analog v. digital). This product should give a whole new dimension to the term "HAM operator". You can also get weather maps and wire-service news photos as images up to 1024 x 1200 if you've got the memory. Cost

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● MichTron has developed this box for all Amigas along with the necessary software. You can store incoming faxes to wherever you want on your system, or print them straight out. Due to the wonderful facility of multi-tasking, you can have your Fast Fax ready to receive at any time. Sending of course is limited to machine-readable data, so you can't fax a page, a drawback but not crippling, depending what you'd use the fax for. Cost is US$549.95 and more info from: MichTron 3285 Lapeer Rd. W., Auburn Hills, MI 48075, USA. Tel: 313 3778998.

16 million colours - Black Belt Systems

● This company has produced a gadget that plugs into your RGB port and monitor, works with any Amiga and current monitor and gives 3 new modes:

1. 256-gray-scale mode - 256 colours from a palette of 256.

2. 256-colour Mode - 256 colours from a palette of 16 million.

3. HAM-E extended HAM mode - 16 million colours from palette of 256,144.

Current manufacturers of graphics software have been contacted to make a couple of minimal changes to software to handle the new modes. Should be available very soon.

IBM board for A500

● The Power PC Board fits into the expansion slot under the A500 and doubles as a PC and a ram expansion card. As a PC, it will run MS-DOS software from internal or external 3.5" or 5.25" drives, will support Hercules/CGA & monochrome video displays, and software includes Microsoft 4.01, MS Dos Shell, *GW Basic* and *CrossDos* for the Amiga. Hardware looks good too, and is said to run faster than the bridgeboard - and it'll use the serial, parallel, mouse and joystick ports. We have received details on this product from numerous local distributors.

Migraph hand scanner

● The Migraph hand scanner is now available in Australia. It has:

- three dither settings for scanning photographs & setting for scanning line art
- Adjustable contrast for working with light or dark images
- interface to install in parallel port

Scans up to 400 d.p.i., has a 4 inch wide scanning window, and needs 1 meg of ram to run. With it comes "Touch-up", a high-res monochrome image editor, allows user to both scan and edit images. Also allows importation of files from Mac/IBM/Atari.

AMAX Mac emulator 2.0 coming

● Said to be coming soon, with support for various hard disk drive setups, latest Apple system software (will FINDER 7.0, the would-be multi-tasking version of the operating system, ever be released?), and more support for sound capability.

Meanwhile, "Disk Manager Mac" for the TrumpCard lets you put a Mac partition on your Amiga hard disk. Without going into the details, it costs US$119.95, and I suggest you get in touch with: IVS (Interactive Video Systems), 11612 Knott Avenue, Suite 13, Garden Grove, CA 92641. Tel: 714 8907040.

Touchscreen system

● MicroTouch Systems, Inc., claims to have developed the first fully integrated touch-screen system for the Amiga - consists of their MicroTouch Screen (with high resolution of 1024 x 1024 touch points), driver software (allows all mouse-driven software to work with touch input, and is the first to emulate a 2-button mouse) and optional monitor. TouchDriver Site licence costs US$395, and the full caboodle is in the vicinity of US$350. More info from: 55 Jonspin Road, Wilmington, MA 01887, USA Tel: (508) 6949900.

Fusion-Forty - yet another 68040 accelerator

● A card for the A2000 running at 25MHz with built-in Maths coprocessor and MMU (memory management unit, necessary for UNIX) and many other Mips and Flops, built by RCS Management (who dat?) in Canada, home of many good Amiga products. No price given, could it be vapourware? More info from: 2075 University Street, Suite 1712, Montreal, QC., Canada H3A 2L1 TEL: 514 2

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INTERESTING PUBLICATIONS

Ready Robot Club disk mag - for kids

● To be released this month in the US, it's for primary school kids, and will try to be both educational and fun - experiments, stories, songs, riddles and so on. Kids will be encouraged to contribute and will be rewarded with certificates, etc. All depends on the execution, I guess - and it's always hard for adults to devise a product that kids will like. Info from: Signs, Etc. by D.Knox, P O Box 628, Carmichael, CA 95609. Tel: (916) 944 4282.

Compute!'s Turn & Burn F-16 book

● Yes, a 248-page book devoted to Spectrum Holobyte's F-16 jet fighter simulation. There are hints for flying, aircraft info, differences to the real Falcon, a flying tutorial and explanations of the original 12 Falcon missions. Info: Compute! Publications, One Chilton Way, Radnor, PA 19809. Tel: 800 3451214.

Fractal video

● A group called Art Matrix has released a 2-hour video called "Mandelbrot Sets and Julia Sets", and it's said to be a visual feast. There is extensive documentation available separately explaining the concepts of fractals. Check also the various Fractal/Mandelbrot programs available in our PD Collection. You can get a flyer and a free postcard by writing to: Art Matrix, P O 880-AP, Ithaca, NY 14851. Tel: 607 2770959. ❑

AMIGA

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LETTERS TO THE EDITOR

C64 Freeze Cartridge Tips

● With all these "Freeze" cartridges that are available now for the C64, it seems a good time to list some of those "obscure" abilities that nobody seems to have noticed. While the "Freeze" function is excellent in its most basic use, simply "backing up" a program, it can be applied in other ways.

Maybe most importantly, it can save you money. If you're a big games buyer, the cartridge will eventually pay for itself. Buying tape versions of games can work out five to ten dollars cheaper. If the game is not a multiload then the option is open to you. You simply load the game on tape once and then dump it on a blank disk. With the right cartridge, it'll reload in six to nine seconds.

I'm not really sure of the legalities of doing this. Personally I don't have a problem with it. You are still buying the software itself, and the producers and suppliers are getting their money, you're just not paying for the expensive medium.

What about the multiloaders? You'll still have to buy them on disk but you can still use the "Freeze" function on them too, to a different end. Well, most of them anyway. Let's say you own a game like US Gold's *Gauntlet*. Now there's a game where the results are very noticeable. While loading, it loads up three different hi res screens and credits, making enough noise hacking about your disk for a construction site. And since most people would pick the same characters to use, the selection screen could be skipped also. All you have to do is "freeze" the game after all the intro, before it loads the first dungeon, and save it out. When reloading, you'll still have to switch disks again back to the original but you'll be playing the game in less than thirty seconds after you turned on the system.

What else can you do with it? What about those long games that don't have a save option? You can freeze the whole game and reload it from the point you left off. It's like opening a walnut with a sledgehammer but it still works. Or maybe you're an ace shootem up player and anything lower than level twelve on your "Blastem all to bits" game is just monotonous. "Freeze" it on level twelve. Even when you die you could probably reset and reload it back again to level twelve in less than half a minute.

Another function of these cartridges is the sprite editing facilities. While it's thought of as a toy-like utility, turning the enemy into fish or something, it can be as much a cheatmode as the "Infinite Lives" function they have, even when it does occasionally work. The "Disable Sprite Collision" function can make a game impossible but selectively blanking certain sprites can make a game a whole lot easier. Taking out the enemy's bullets is a good example.

So there it is, four alternate uses for your "Freeze" cartridge. And which one do I recomend? Most can be used for these things but maybe the "Expert" is too limited: A couple times I've wanted to save a game at a certain point but didn't have the foresight to load the "freeze" module into the cartridge. I can recommend the latest version of "Action Replay".

Grant Testor
NorandaWA

Why not a Video Magazine?

● I am a relative newcomer to the world of computers, and only found *ACAR* by accident about three months ago. I can guarantee that I won't be missing any future issues. Basically your magazine is just the best there is.

The following idea may already have been suggested, but how about making this year's Annual a video magazine. All that incredible software and hardware reviewed each month could be put to some constructive use. Video reviews of the year's best software, in each category, in action before your eyes - better than demo disks. Speaking of demo's, it would be great to see some desk top video demo's too.

I am about to upgrade to an Amiga and my main areas of interest are animation, graphics, music, digitising - visual and audio - basically everything that the Amiga does best. Would it be better for me, as a beginner to buy an A500 and upgrade to full 9 megs of memory and hard drive gradually as limitations are discovered or to go completely into hock now and get an A2500 with 40 meg hard drive and 3 meg extra ram deal?

Although the former sounds more sensible, it may be more cost effective to buy the latter as I am not fully aware of all the available upgrade equipment and the end cost.

DougMurray
South Yarra, Victoria

Ed: What a fad idea. I recommend you jump on one of the new A2500's with a 68030 and 2mb - otherwise start with a plain 2000 and build up.

More praise

● I would like to congratulate you on a truly superb magazine. I have been reading *ACAR* on and off for about four years now and more regularly since January this year. In the next few weeks I will be buying an Amiga 2000 and take particular interest in your software reviews and Adventurer's Realm as well as the entire magazine in general.

A Cooper
Picnic Point, NSW

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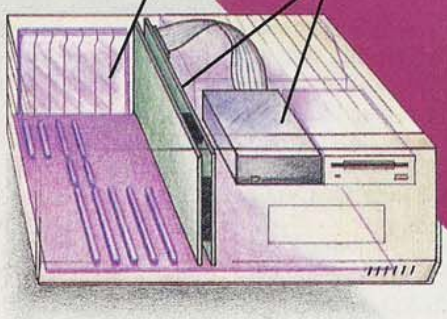

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AMOS - The Creator

Power to the programmer

by Andrew Farrell

Imagine the power to design BASIC programs which run more like assembly language. Imagine smooth scrolling screens, dozens of sprites and BOBs, music and complex collision detection all handled by one high-level language. AMOS promises to deliver all these features, and many more.

AMOS may well turn the Amiga into the BASIC programmer's haven the Commodore 64 was. At the moment, few Amiga owners actually program their machine. The included Basic language, whilst reasonably powerful for text window based applications, lacks the power and low-level access to the really interesting graphics capabilities of the machine.

AMOS was designed and programmed by Francois Lionet. STOS BASIC for the Atari ST was written by the same man - it went on to reach number one in the ST Gallup games charts!

Apart from being a super-enhanced BASIC programming language, AMOS also offers powerful commands to handle features you would normally only find in an arcade game.

What you get

AMOS is easy to spot on the shelf of your local Commodore dealer - the glossy blue box says it all. Inside you'll find a 293 page manual, the AMOS program and data disk, information about the local AMOS user club, a handy index and reference guide, and a page of various and assorted notices.

According to Pactronics, the club is for real, and we can look forward to support in the way of tips, hints, PD-Examples and a PD-Runtime Module which allows AMOS programs to run without AMOS. All this should be here in a mere matter of weeks. If all goes well, *Australian Commodore and Amiga Review* will be running a regular column on AMOS real soon now.

So, when you buy AMOS, you get more than just a manual full of strange commands - you also get support in various forms. AMOS looks set to be the new Amiga programming standard - apart from C of course!

Documentation

Inside the AMOS manual you will find some heartfelt words from the author, a tutorial on getting started, a guide to the Editor followed by a subject by subject reference section. Graphics, Text and Windows, Maths, Screens, Hardware and Software Sprites, AMAL - AMOS's animation extensions, Menus, Music and Sounds and Disk Access are the main headings. There's also information on low-level machine access. Old-time C64ers will be happy to see PEEK and POKE are back in style, with the addition DEEK, DOKE, LEEK and LOKE.

I spent the first two hours skimming the manual, reading about those commands which caught my eye. AMOS seems to have something for everyone. The manual is well written, and well bound. I strongly recommend you skim the entire book first as I did, and then follow the tutorial. As you need to write code for a particular task, refer back to the documentation as required. Some of the demonstration programs on the data disk are worth checking out - even if it's just to examine the code and see how it was done. The demonstration disk I saw on the Pactronics stand at the World Conference on Computers in Education contained far better examples of what was possible with graphics and animation.

AMOS Editor

Editing your program code is a reasonably pleasant activity. The only unusual feature is the Atari-ST type menus which activate as you move over them. Once you get used to the idea, they work quite well.

At the top of the edit screen is a menu window containing a list of the currently available commands. Using the mouse and the left button you can quickly execute a choice - or for even faster results use one of the keyboard equivalents. After a little practice, the interface really grows on you.

A constant reading of available EDIT, CHIP, and FAST RAM is displayed - 512K users will find this important. The editor has both insert and overwrite modes - something many others sadly lack.

As commands are entered, they are converted to AMOS tokens. AMOS commands are changed to upper and lower case, whilst variables and procedure names are changed to upper case. This makes spotting typo's early in the piece much easier. Your program may be structured with labels, line numbers or procedures.

Scrolling around a listing is accomplished using scroll-bars or the usual diamond cursor pad. With the CTRL key you can jump whole pages at a time. Several programs can be in the TEXT RAM area at one time - with full editing, including cut and paste, between each program. This is also handy for keeping often used routines in memory for speedy placement into new programs. A separate DIRECT mode window enables commands to be executed immediately. The ESC key toggles between windows.

Up to 20 keyboard macros may be defined for commonly used keywords or expressions. You can also create accessories which run on the current program screen. A whole host of additional editing keys enable complete wordprocessing-like editing, and movement about text.

More than BASIC

All the usual BASIC commands are supported, including memory variables and string functions you might only expect in a database product. For example arrays may be sorted, or searched using a single commands. Strings can be located within strings, made upper, lower, or upper and lower case, or flipped all with one function.

Random Access and Sequential disk files are supported. AMOS would be ideal for creating custom database applications. The menu commands are especially good. Creating screen gadgets is very easy. Many of the facilities are so powerful, what would normally take several lines happens in one or two.

Various extended structures are supported such as DO... LOOPs, PROCEDUREs, IF... THEN... ELSE, IF... ELSE... ENDIF, EVERY n GOSUB and EVERY n PROCEDURE. Other commands include WHILE... WEND, REPEAT... UNTIL, and EXIT IF. Printer support includes LLIST to print a program, LPRINT to output

variables and LDIR to list a directory. There's plenty of disk support available, with file checking and testing and a full file requestor available for use from with an AMOS program.

Graphics

When it comes to bells and whistles, AMOS really gets going. Commands are included to work in any graphics mode, including HAM, to create various shapes, work with extra large images, BOBS and SPRITES. If it all sounds like Greek, don't worry, the commands themselves are surprisingly easy to get results from.

Polygons, points, boxes, lines, circles or ellipses are supported. There are 34 standard fill patterns for solid shapes and these may be edited at will. Different line styles are supported. Drawing can be restricted to a certain screen area - ideal for simulations where a mask of the cockpit of a plane or car sits over the screen area. Drawing speed is exceptionally fast.

Screens of any resolution, in any of the various numbers of colour bit-planes available, can be opened. Screens larger than that which may be displayed may also be used for large scrolling landscapes. A very powerful scene editor allows even larger landscapes to be designed from basic building blocks - a method often used in commercial programs. EHB mode and HAM are catered for too. Using SCREEN OFFSET, scrolling around large screens is very simple.

Once you have a screen defined the contents may be saved, or an IFF picture LOADed into it. Bouncing screen effects can be produced using the SCREEN DISPLAY command. Dual playfield is supported - a mode whereby two screens are allowed to sit on top of each other. You can use this ability to create smooth scrolling parallax landscapes like those found in *Silkworm*.

Portions of a screen may be copied to another screen or the same screen using SCREEN COPY. The speed of this operation is lightning fast.

Using DEF SCROLL an area of the screen may defined which scrolls. Using screen switching this process can be smoothed out. Full double buffering is handled, and SCREEN SWAP lets you keep track of where the drawing is taking place. Using the VBL command, you can ensure program flow does not continue until the screen has been updated during the Vertical Blanking period. This happens when the raster which draws the screen display flys back up to the top of the screen to start again. AMOS uses this time to make any changes to the screen. What all this means is that smooth animation is possible even within what is only a BASIC program!

Full access to the COPPER list is available. You can set up your own custom list and move it into position.

Sprites and BOBS

Although Amiga hardware limits the number of sprites and size of each sprite, AMOS overcomes this by changing sprite settings on the fly - a technique usually only available to machine code programmers. Instead of being limited to sprites 16 x 255 you can go as large as 128 x 255, which is a far more useful size.

Sprites are loaded in as data from a sprite editor. That way, it's easy to create fancy sprites without reverting to adding up binary numbers. Sprites are ideal for those elements of a game which need to move quickly, independently of the main screen display - the mouse pointer is a good example, as are bullets in a game.

Larger slower moving objects can be achieved using BOBS which are like Sprites, only they are generated by the BLITTER chip - these can move around memory very quickly, writing up to 1,000,000 pixels to the screen at one time.

Full collision detection between sprites and BOBS is available. Zone detection is also available to see if a BOB or SPRITE has entered a particular defined ZONE on the screen.

AMAL - animation in interrupts

Keeping all these elements moving can be tough using standard commands, and the slow speed of BASIC. There simply isn't time for BASIC to handle all the objects you need in a game at one time, and keep the movement smooth and synchronised. However AMAL (AMOS Animation Language) is interrupt driven and animates your objects for you with commands such as MOVE, PLAY and ANIM. AMAL programs happen in the background, many times per second, and are stored and run in a more efficient form than normal AMOS code.

Some of these commands are amazingly powerful. Mouse movement may be used to set the attack path for your alien hordes. AMAL animations may be controlled from AMOS using AMPLAY - which sets the tempo, direction and start or end points of an animation.

Text and windows

A dozen different commands provide control over text positioning and placement. Standard Amiga fonts may be used. Text may be very easily placed complete with a gadget ready for mouse selection using the ZONE command. Gadgets may have any of sixteen different borders. The following command would display the text with border, with a zone ready for mouse detection:

```
Print Border$(Zone$("ClickHere",1),2)
```

Text may also be scrolled vertically or horizontally. Windows with different fonts, titles and optional slider can be opened and moved around. Fonts from disk, ROM or those in the current FONTS: directory may be accessed.

Conclusion

AMOS has so many more features which space simply does not allow us room to discuss. I haven't touched on music - which includes support for *SoundTracker* modules and *Sonix* tunes. There are many powerful math functions, and assorted commands for accessing low level Amiga functions, displaying background screens and much more.

There is no doubt the package may well become the de facto standard for Amiga programming. I certainly hope this happens - watch for a regular column starting next month.

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A trip into the fascinating world of modems

by Andrew Leniart

MODEMS ARE A lot of fun, but like just about anything to do with computers, finding information about them, or how to use them if you're a beginner, is like looking for the proverbial needle in a haystack.

I have now overcome a lot of the difficulties I was experiencing while trying to learn about modeming and hope to clear up a few of the mysteries for other beginners in this article.

Having just laid out $420.00+ for one Maestro ZXR modem, supporting all baud rates, and cable, I was keen to get it home and try it out. Tearing the box open and getting white foam packing over the whole kitchen table, I took my new toy out and proceeded to examine it carefully. Satisfied that everything looked in order, I tossed the instruction manual (first mistake) to one side and proceeded to hook it up to my Amiga. Serial cable in serial port: check! Telephone cable in socket: check! *Access* (a PD Comms package) in drive Df0:, click on Icon and away we go.

The computer shop where I bought my Maestro gave me the Public Domain communications program *Access* and assured me that everything was configured for my modem and set up ready to go. How wrong that turned out to be - but that's another story. My first problem was with the way the modem was dialling.

There are two ways a modem can dial in Australia, one is the standard "Pulse" dialling which can easily be recognised by the distinctive clicks one can hear after each number is dialled. The other is called "Tone" dialling, which has the advantage of speed and can be recognised by hearing beeps and bops as opposed to clicks in the receiver after dialling.

Access was set up to tone dial my modem, but the problem was that the telephone exchange my phone was hooked up to was not using the tone dialling function on my phone. The end result was hours of trying to phone Bulletin Boards and getting what sounded to me like a busy signal. I finally realised when I failed to get through to Viatel after an hour of trying. (Figured it was impossible for ALL their lines to be busy that long.)

So the first lesson was learnt. For those that may not know, the way to get your modem to dial on screen is to use one of the following commands. For pulse dialling, ATDPxxx where the x's represent the number of the BBS that you wish to ring. Or, ATDTxxx for tone dialling.

The key letters here are "DP" and "DT". The letters AT precede all commands which are to be issued to the modem, D stands for Dial while P and T represent pulse or tone dialling respectively. If you are unsure whether or not your phone supports tone dialling, just ring your local telephone exchange and ask. For the first time though, it is probably best to stick to pulse dialling as you can be sure that will work.

Bulletin boards

Having crossed that hurdle, I was finally able to get through to a . Club Amiga in Melton, Victoria was the first BBS I managed to log onto. I was greeted with a Welcome screen which asked me to type in my name. I followed the instruction and was told that my name was not located and asked to confirm that I entered my name correctly. Having done this, I then had to go through the formalities of entering name, address etc as well as a couple of other questions, after which I was given 15 minutes to look over the board.

This is the norm with most bulletin boards. To get longer access time, you must first wait until the SysOp (System Operator) looks over your membership application and adjusts your access level accordingly. The next couple of hours were spent ringing all the various boards local to my area. Great fun!

As the days went by and I started to get the hang of this new contraption, I began to learn that there was a hell of a lot I didn't know, which I needed to be able to take full advantage of what these boards had to offer. For instance, the first time I tried to download a file, I was asked to select a "protocol". I chose the right one by sheer luck, hence succeeded in the download, but what the hell was a protocol?

Protocols

● Protocols are different methods which can be used to transfer files via the telephone and your modem. There are a fair few of them and the one which you can use depends on which ones the BBS supports. Just as important are the types of protocols your communications software supports. The actual protocols are written by people with far more knowledge in this field than I will probably ever have, but the best and fastest one at the moment is ZMODEM.

ZMODEM protocol is the quickest and most reliable way to transfer files and is favoured and supported by every bulletin board I have rung to date. It allows for things like "batch transfers", which means you can elect to receive or send a number of files at one time. Unfortunately, it is not a protocol which is supported (to my knowledge) by any versions of the popular and colourful *Access!* comms package available in the public domain.

There is however another communications package available in PD as shareware that goes by the name of "JRCOMM94a". *JrComm* by Jack Radigan is truly a superb communications program, easy to get the hang of and very reliable. I downloaded this program and have been using it ever since.

However before I could begin to use it, I needed to learn another lesson. The art and purpose of file "archives".

Archives

● An archive is a group of files which have been crunched or compressed and pulled together to form one file instead of a few. The reason files are archived is to use less space and make uploading and downloading quicker and generally less painful - it costs less when STD charges apply. You must UnArc a program after you download it from a BBS and in order to do this, you must have the appropriate archive software.

There are many archive programs being used at the moment and a few of the more common ones are ZOO, ARC and PACK. I've now learnt that these have been around for ages.

The latest and preferred archiver at the moment is a Public Domain effort that goes by the name of LHARC. *Lharc* was crated and kindly placed in the PD library by a chap called Paolo Ziberth and is currently the best archiver around. *Lharc* claims to create the smallest archives at the expense of a bit more time to do the job and after trying out nearly all of the ones listed above, I find this to be true.

Lharc's archives are easily recognised by the suffix ".lzh" on the end of the file names. In the same fashion, one can recognise the other forms of archives by their respective suffixes. Most are self descriptive. ie; .zoo for ZOO archives, .arc for ARC and so on. Learning to use these programs is actually quite easy as the documentation supplied with them is mostly comprehensive and excellent. (Amazing what you can learn by reading the instructions!)

There are even programs that will archive a whole disk, bootblock and all, and a couple that come to mind are WARP and LHWARP, the latter which has the equivalent benefits of the file archiver lharc. *Lhwarp* by Jonathan Forbes consistently produces a smaller archive of a disk than any other disk compression program available at the time of writing.

The beauty of using these utilities lies in the fact that when a disk is compressed and later uncompressed, you end up with an exact duplicate of the disk you Warped or Lhwarped. The original disk's directory structure is maintained right down to the disk's original bootblock. There is even an automatic virus checker built into the program which checks a disk's bootblock for known viruses when unwarping the disk. A great feature this, which safeguards you against infected downloads.

Most boards have all of the above archivers for downloading and they are usually found in PACK format. This is a handy archiver as no special software is required to "un-pack" the archive. All you need do is execute the archived file in the CLI and it will un-pack itself.

Anyway, getting back to *JRComm*, just about every BBS has this file on their board which can be downloaded freely and tried. Better still, why not just get yourself a copy from the public domain to avoid the hassle of setting up another program to download it.

JRComm

● *JRComm* is shareware, which means that if you intend to continue using it after a trial period, you are encouraged to make a contribution to the writer for which you will receive the latest version. The suggested amount to register with *JRComm* is US$50. Personally, I think it's worth it.

JRComm also supports ANSI colours which means you get a more colourful screen when connected to a BBS that transmits in this fashion. Most boards have ANSI screens, which are well drawn and full of colour, so it is nice to be able to take full advantage of what they have to offer.

Playing around with the modem nearly every night, I found it wasn't too long before I started to wonder just how these BBSs go about doing their stuff and what makes them tick. I did not realise that I was soon to be given a personal tour through my favourite one.

After a while, you will tend to favour one or maybe two BBSs over the rest and will find yourself tending to ring those more than any other. This was true for me with the Club Amiga board, so much so that I decided to send the SysOp a small donation to gain VIP access to the board which promised more time online, higher download limits etc. Shortly after, I received a telephone call from the club's manager thanking me for my donation.

The SysOp of Club Amiga BBS (the name has nothing to do with the Club Amiga we see advertised in *ACAR*) is Rob Canavan, and when he rang we got talking about this and that. One thing led to another and I ended up quizzing him all about the board, asking things like how it works, what's involved and generally wanting to know the ins and outs of the whole operation. To cut a long story short, I was given an invitation to come down to his house and be shown the whole set-up. Naturally I jumped at the chance.

I will be forever grateful for the help and courtesy extended to me by this SysOp. I spent around four hours at this man's house and actually caused him to be late for a dinner appointment. A fact which he brushed aside with a "Don't worry about it mate, glad to be of help. The missus understands . . ." Rob's wife, obviously used to this type of thing occurring, took it in her stride.

Club Amiga BBS

● The trip proved very worthwhile and what follows is a brief description of how Club Amiga and in fact most BBSs are set up and operated.

The first surprise came when I noticed that the machine that was actually operating the BBS was a Wang! (what? not an Amiga?) connected up to an 80Meg hard drive. (There are actually very few clubs I know of that run their board with an Amiga.) The modem that answers calls was exactly the same one which I had. Rob told me that he has been using the Maestro 2400 ZXR for some twelve months now and that it has been sitting there running 24hrs a day all this time without a problem. Something I found quite comforting to know.

I was shown how all the various functions worked, including how the system performs its regular maintenance automatically every night at about 3.30 am - at this time, figures are updated, Netmail is sent and received - and all the other interesting details of what happens when a new person logs on for the first time, etc.

I also found out that running a BBS can mean a fair bit of work. A System Operator must perform various functions daily in order to keep the system running without any hitches. New users need to

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be checked out daily and their access levels adjusted accordingly. Messages must be answered, and uploads examined before they can be made available for downloading. Most surprising of all, I found out that all this was done out of the man's own pocket and time.

In fact, most BBSs are run purely on a voluntary basis, and the operators pay for the expense of telephone calls etc out of their own pocket. Club Amiga did have sponsorship at one stage, but the sponsor withdrew after a while and the decision was made to keep the board operating in the hope that a new sponsor might offer some help. It's about 14 months now and still no luck. Any offers . . . ? Rob can be contacted personally at PO Box 202 Melton Victoria if anyone is interested, and is willing to discuss terms with anyone that might be willing to help out.

Club Amiga is a typical BBS which naturally has a Messages section. This area contains loads of general messages from its own users as well as "echo mail" messages, which cover various other BBS message bases which are echoed between the clubs which are linked.

NET mail is an excellent feature in the messages section as this gives a user the ability to send messages to anyone at any BBS in the world for the price of a local call. You must have VIP status to be able to write or receive NET mail, however this feature alone is worth the few dollars asked for VIP status.

The files section on the board consists of the usual Utilities, Games, Communications software, Demo's and Music and a whole host of other sections which are choc-a-bloc full of goodies that can be downloaded.

HCS Help-Line

● Just recently, a new area called the HCS Help Line was created which is devoted to helping new users out with their problems on learning about the Amiga and how to use it.

I actually initiated the idea of the area myself and have been given limited SysOp access to its message base and file area. All types of questions are welcome at Help Line and every effort is made to get the answers to people's problems. The feedback on this idea has been excellent so far and I'd like to take this opportunity to thank all of those that have left messages of encouragement to me in the area.

There are also online games which you can play against the computer, so you can try to get yourself onto the high score table and beat all the others that are playing the same game when they log on.

Quite a good BBS this one in my opinion, so check it out next time you get a BUSY signal when trying to get onto your favourite board. The number to Club Amiga BBS is (03) 743-1957.

There is so much you can do on these boards that you never seem to have enough time on-line to do it all. Playing games against another human opponent, chatting with the SysOp or somebody else on-line (a real buzz), downloading, uploading, reading and writing messages, the possibilities are almost endless..

Well, it's been about six months since I purchased a modem and I'm still having a ball. I can thoroughly recommend this pastime to anyone who is getting just a little bored with everyday computing and is looking for something to bring back that excitement that we all experienced when switching a computer on for the first time.

But be warned, computing over the telephone takes you like a drug. The more you use it, the more you want to use it. The only thing I dread these days is the arrival of the telephone bill.

Till the next time . . . ❑

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Expanding your Amiga with XEL
A real end user story

by Peter Youll

Here's one of those genuine satisfied end user stories. (Not all are filled with such bliss.) So it's over to Amiga fan, Peter Youll.

Before the addition of the equipment under review, our Amiga consisted of the standard system (A500 + 1084 monitor) purchased in early 1988, and an A501 memory expansion card, purchased about a year ago. I had been lusting after a hard disc right from the start, but there always seemed to be something more important to do with the available funds - paying off the mortgage for instance!

Finally we had some spare cash and an occasion to use as an excuse, so I followed contacts made earlier with a group in Adelaide calling themselves Hard Disc Technologies. Yes, they were still in business, and expanding in fact. They now could sell me a 44mb drive, and a controller with room for an extra 1mb of memory. The price had not changed - $1195. The cost of the memory to populate the controller was negotiable. OK - let's do it.

We visited my brother-in-law in Adelaide over the Xmas break. As arranged before we left, on the Saturday before the big day I called around to the home of Greg Hicks, the chief poobah of HDT. Greg explained the change of name from HDT to XEL - they couldn't figure out a nice logo for the HDT initials. He was passing the time inserting memory chips into disc controller boards, and unfortunately had forgotten that I would be calling to pick up a drive and controller.

By way of consolation, he agreed to let me have a fully populated memory expansion for an extra $122, which I could take with me, and he would send the disc drive by courier (at their cost) when he returned to work after the holiday break.

So I went home without a disk drive but with a 1mb expansion at a price that couldn't be resisted. After some confusion about who was to act first, (they expected the rest of the money before dispatching the drive, having been caught being too trusting earlier) the disc drive arrived about three weeks later.

What did we get

● The memory expansion and hard disc interface is a flat metal box, about the same colour as the Amiga with a large blue XEL logo. Its dimensions are 175mm x 100mm x 16mm, and it is shaped to connect to the side expansion slot and rest flat on the desk. The disc drive comes in a plastic fronted sheet steel box 350mm * 155mm * 95mm, coloured slightly different to Amy and the memory expansion.

It also has a large XEL logo moulded on the front, plus two lights. The power switch is at the back, as is a small fan. The drive is connected to the interface via a 800mm long ribbon cable. Everything is reasonably well finished, though the colour mismatch is a shame.

Also the heads of a pair of screws securing the power supply inside the drive box fouled the cover, so the bottom of the case was distorted when it was screwed to the top cover. The box thus rested on only three out of its four little rubber feet. I fixed this by cutting away the offending part of the top cover - tsk tsk!

Installation

● Adding the memory expansion was easy - remove the cover from the expansion slot and plug it in. Boot up the system and low - somewhat under 2mb of memory available at the Workbench, and the ability to run the *DPaintIII* animations that couldn't be loaded before, and room for nearly 500 pages in *Textcraft*. Nice! The expansion box gets warm after about 20 minutes, otherwise it just sits there.

The drive arrived in a serviceable no frills box, protected by a foam plastic frame. Also included was a floppy disc (unlabelled) and a chip in a tube, and that's all. No instructions!

The first thing I usually do with new toys is to have a look inside, where I found another surprise - a Seagate ST251 MLC-1 instead of the promised Miniscribe. The PC support person at work looked up his tables and found that the Seagate had a 28msec seek time compared to the 60msecs of the expected Miniscribe, so that was OK.

A phone call to Greg brought an apology for the lack of written instructions and an explanation of the change of drive - they couldn't get a Miniscribe, and the Seagate had cost them an extra $100. The installation instructions were simple - undo the four screws and open up the memory expansion, insert the chip in the vacant socket, plug the ribbon cable into the other socket (bit of fiddling required here to avoid a little capacitor on the board) then screw it back together. Plug the disc drive into the power, the expansion into the Amiga, turn on the drive (lots of satisfying little noises) turn on the Amiga, insert the supplied floppy and away we go. The drive will not start unless the Amiga is turned on first.

In use

The drive makes a fair amount of noise, more than I am used to from the Macs and IBM clones at work. The fan whines, the drive does likewise, along with the clicks and clunks while it is working. I assume the size of the box and lack of other noise absorbing devices in it, plus the comparatively low level of background noise make it seem louder. I have become used to it.

The XEL drive does not auto boot, which was a disappointment at first, however this shortcoming provides a safeguard against the serious problems now caused by viruses. If the Amiga doesn't have a boot block on the hard drive, it cannot be infected by boot block type viruses from a floppy. The inconvenience of booting from a floppy is minor, and it makes little difference to the speed of booting, since the startup-sequence can be changed to use the hard disc at an early stage.

The drive came partitioned as a single device, and contained about 5mb of mostly useful stuff, about half of which

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was titled *The Best of Megadisc*. There was shareware for back-up called mrbackup, a terminal emulator called Handshake, recent version of Discsalv, virusx, some games, and lots of programs in the c: directory I have never heard of and most of which I have yet to try. The first thing done was to backup the boot disc and the contents of the drive. There was an unrecovered disc read error during this process.

Having planned this purchase for a long time I knew exactly what I wanted to do next - format it into 4 x 10mb devices called system:, work:, play: and food: - the essentials of life.

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The process began well, lights flashed, soft clicking from the drive, numbers counting up on the screen, then all sorts of strange buzzing noises and much slower progress in the formating process - was this connected with the earlier disk read error?

Another call to Greg, who walked me through the use of a program called lowleveltool, which checked the drive from track 0 to track 811 without a problem. From there onwards it found errors. Here was the explanation for the strange noises - there are flagged errors on the drive on head 2 from track 51 to 61. Writes destined for these locations are remapped to tracks 811 to 819, which causes a lot of head movement when the drive is being formatted. The disk read error has never recurred.

Applications

● So far I have loaded *DPaint III, WordPerfect* and some public domain games, and made many changes to the startup-sequence. There is more to do yet, particularly getting the Version 1.3 stuff installed, as soon as I can find a shop that has a copy to sell. We have not yet got away from swapping floppies - some games cannot be copied onto the drive. However the speed and convenience of the hard drive are a joy. *DPaint III* loads in about five seconds, compared to 30 seconds grinding on the floppy drive.

The system is now complete - 2 Mb of memory should enough, likewise 40Mb of disc, for a couple of years at least. Now comes the challenge of *WordPerfect*, which has been sitting on the shelf unused for six months awaiting a hard drive to make it usable. This is my first effort, after being a heavy user of *Textcraft*.

Conclusions

● At a cost of $1317, the XEL combination of 1mb of memory, a 44mb disc drive and controller is by far the best value I have come across, particularly given the fast drive I ended up with. Deliveries outside Adelaide would normally attract an additional charge of $40; XEL carried this charge since they could not provide a drive when I arrived to pick it up. The lack of written installation instructions was a disappointment, however I expect this problem has been resolved. I have no complaints about the support provided, apart from the STD charges.

The drive was quite usable and could have been left as it was delivered. I have chosen to fiddle, and have learned a deal more about the CLI in the process. The drive has renewed the interest of the entire family in the Amiga, which tended to flag in part due to the restrictions imposed by the floppy drive. If you are contemplating adding a hard drive and/or more memory, the XEL is well worth consideration, the more so because at least some of the money you spend will stay in Australia.

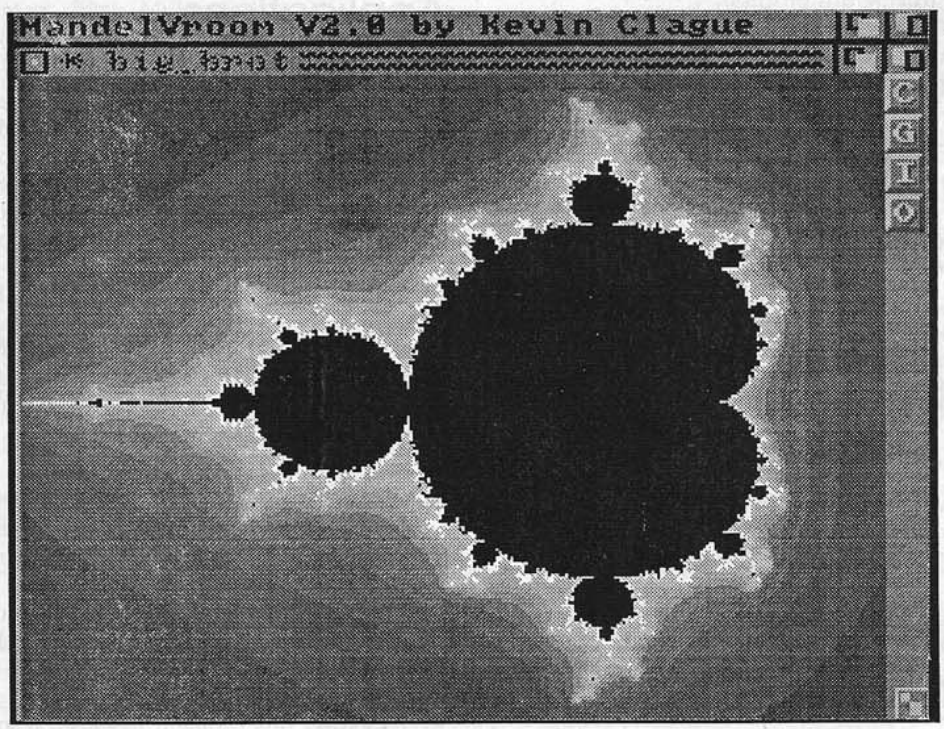
For further information contact Greg Hicks on (08)3705369 or 018824648 (mobile phone). ❑

PD - Mandelbrots and Fractals

by Scott Campbell

ANYONE WITH AN interest in the latest developments in science would have heard about chaos, and many people would have heard about and seen the strange objects called mandelbrots and fractals that have been adopted as the emblems of this new field of science.

The exciting thing about this for Amiga users is that the Amiga, with its graphics power, is ideally suited to displaying these beautiful images. Not everyone is exactly sure what these things are.



Well, firstly to mandelbrots (named after Benoit Mandelbrot who discovered them, while working for IBM). Take any point on the complex number plane, square it and add the original complex number. Square the result and add the original complex number and so on. If the number stays finite after the desired number of iterations, it is in the mandelbrot set. Numbers that head off to infinity are plotted outside the set.

This sounds pretty boring, but it results in some stunning images that are, wait for this, infinitely detailed. That means that you can look closer and closer at the set and never 'bottom out'! So from a simple iterated operation we can come up with infinite complexity. Quite possibly nature often works in similar ways.

The mandelbrot set is fractal in nature; that is, it is self-similar on all scales. As you delve deeper into it, you'll find tiny copies of the set, that are slightly different, and these also contain slightly differing images of themselves.

There are two types of non-mandelbrot fractal programs for the Amiga. Most are diffusion-limited aggregation generators, but the most interesting sort is exemplified by FracGen off Fish #188. This program enables you to start with a simple 'seed', that is, a shape composed of several line segments, and replace any of those segments with smaller copies of the shape itself. You are able to specify which lines to do this to, and for how far 'down', and whether to flip the line up the other way, and so on. Again, from simple beginnings, and with simple operations based on iteration, amazing images can result.

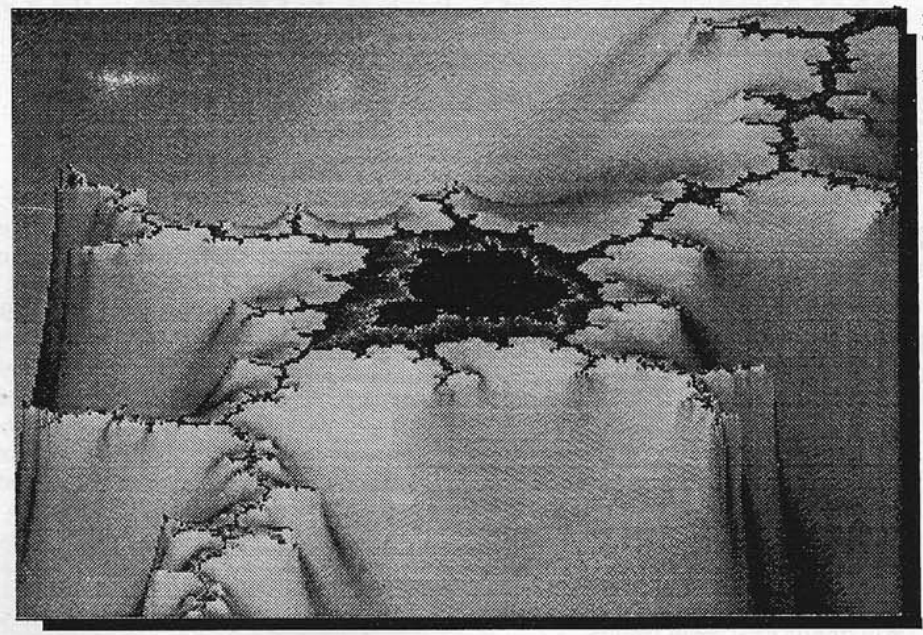
These often resemble objects from nature, at other times complex geometric shapes. On the disk are a lot of seeds that the author, Doug Houck, has set up ready to generate, often with effective use of colour, to give you the idea. It is interesting to note that George Lucas's film company has a computer graphics section, which spends much of its time making animations which include mountains, plants, trees, crystals and flames, all of which are generated by fractal techniques. It has already used these techniques as special effects in some films.

There are various mandelbrot programs in the Fish library, and there are now some commercial programs appearing. A good one to start with is Mandelbrot! off Fish #239, because it is faster than most, and simple to use. This is important, because the main problem with mandelbrots is that they can be slow to compute for 68000 users.

The author of Mandelbrot!, Nick Didkovsky, boasts that it shouldn't take more than 15 minutes for the most detailed picture to generate, though I have found that some pictures can take a little longer. Like all good mandelbrot programs, you have some choice over the screen format, with Lo-Res, Lo-Res/Interlace and Hi-Res/Interlace the options. The higher the screen resolution, and/or the larger the picture window, the slower the generation time.

There is also a cycling option, which the author calls `frivolous', but which produces some mind-blowing effects, especially with the right picture.

As Mandelbrot! uses scaled integer math rather than floating point math, after a while you won't be able to zoom in any further because of the lack of precision. Other programs that use floating point math (or at least give you a choice) can zoom in much, much further, though



they will be slower.

The best of the PD programs, for 512k users, is MandelVroom, off Fish #78. One meg users should go for MandelVroom V.2.0 on Fish #215 (512k users can also make some use of this). Both programs, though especially V.2.0, are excellent examples of software that make full use of all the Amiga's capabilities.

They are both user-friendly, with full docs, powerful (though involved) colouring options, support for extra-halfbrite, and have many options open to the user. V2.0 is fully multi-tasking, though you will need plenty of memory if you want to have multiple pictures, or run other tasks. It also supports the 68020 and the 68881/68882; the maths co-processors offer dramatic speed-ups. PAL and overscan are also supported, and you can zoom out as well as zooming in. And as an added bonus, V2.0 is also a Julia-curve generator. These are close cousins of the mandelbrot set, and are just as interesting.

One of the best aspects of virtually all such programs is that you can save your screens as IFF files. I'm building up quite a store of pictures which I'm putting into slideshow programs. The result is one of the best demonstrations of the wonders of the Amiga. If you have a colour printer, you will also be in luck, as mandelbrots and fractals look great when printed out.

Recently, some new mandelbrot programs have come out offering 3D mandelbrot images! Two such programs are MandelMountains (Fish #295) and CPM (Fish #303). What they do is generate a mandelbrot, and put it atop a mountain based around the shape of the mandelbrot. I would advise, though, that you start off with the 2D programs first, to get a better idea of what the mandelbrot set is about.

In fact CPM requires you to do so, as it will only generate pictures from co-ordinates you enter (which you must get from other programs or books). There is a ready-made Data-File, though, which generates and saves a sequence of mandelbrots automatically, and it is supplied with many entries for a starter. This is handy for running overnight, and doing a whole bunch of mandelbrots.

A different sort of 3D program is TurboMandel off Fish #302, which gives a diagonal view of the mandelbrot, and raises points according to their "altitude'. This could be interesting, but TurboMandel is not sophisticated enough to make it so (though it is a reasonable 2D program).

On Fish #303 is another Mandelbrot program called DEM. It will generate very detailed images of the mandelbrot set in black and white, so that you get all the wriggly bits. Surprisingly, the pictures produced are not all that attractive, partly because the areas outside the set are just white, and it is here that the really interesting details are usually found. DEM can be extremely slow, though it does have the same Data-File option as CPM.

My advice, then, is to get hold of MandelVroom, Mandelbrot! and/or FracGen, and prepare yourself for a truly amazing journey exploring some of the most fascinating objects in existence. o

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A Handy Scanner

by Andrew Farrell

A scanner is one of the most elegant methods available of getting graphics into your Amiga. Costwise it compares favourably with a frame-grabber, however the quality is considerably better. Pactronics have released a range of new models in Australia. This month we take a look at their hand-held colour model.

DIGITISING IMAGES using a camera can be tricky business, especially if you don't have exactly the right lighting. Camera quality can also play a big role in the end results, not to mention how difficult it is to digitise a flat image without getting high-spots where the light hits the page. The solution is a colour scanner such as the Cameron Handy Scanner.

Despite the hefty sized box, the Cameron Handy Scanner is a compact device, about twice the size of a mouse. You connect it to your Amiga 500 or 1000 by means of a small interface which plugs into the side expansion port. The Amiga 2000 version includes an adaptor which enables one of the internal slots to be used. An extension cable and mounting bracket bring the connection socket to the back of the machine.

Setting up is simple. Amiga 2000 owners will need to take care the orientation of the adaptor and interface is correct - a small guide pin would have helped. The expansion port is passed through the interface allowing Amiga 500 and 1000 users to connect other devices such as an external hard drive.

I originally tested the review unit on an A2000 equipped with a 68030 processor. It seemed to have some difficulty operating - so we then tried it on a standard A500. The scanner fired up first time without a hitch. Ewen Bishop, Pactronics technical support man, informs me that the scanner operates happily on 68010 and 68020 based machines.

The included documentation is fairly brief. The 19 pages cover the main features thoroughly, although there could have been more practical advice on getting the best results.

If you try to scan in an image which has already been scanned such as a photograph in a magazine, the results will vary and may tend to show up strange patterns not present in the original image. (This can happen with many, if not most, scanners.) Original photographs will produce excellent results.

Software

● A simple program called *ColourScanner* is included to scan and manipluate images.

From the Project menu you can Scan, Load and Save images or Print what is currently in memory. Scanning requires a steady hand and a flat surface. Once you have selected the scan function, a small light in the hand-held scanner switches on, indicating all is well. When you press the scan button on the scanner, processing begins. You then drag the scanner smoothly across whatever you wish to scan, holding down the button as you go. I found the program handled small variations in the speed the scanner was dragged quite well, although larger changes caused serious deterioration of the resulting image.

The scanner will capture up to 4096 colours in HAM mode, which means it works in 640 x 200 screen resolution. This degree of detail is acceptable for images intended for on-screen use. Cartoons and free-hand drawings scanned in very nicely. However, large headings and fonts were not so good.

From the display menu you can select 16, 32 and EHB colour modes. You may switch between modes at any time. Palette optimisation helps eliminate inaccurate colours when switching to HAM mode. With GAMMA correction on, the contrast level is easily boosted without the inherent quality loss of simply increasing the brightness of every pixel.

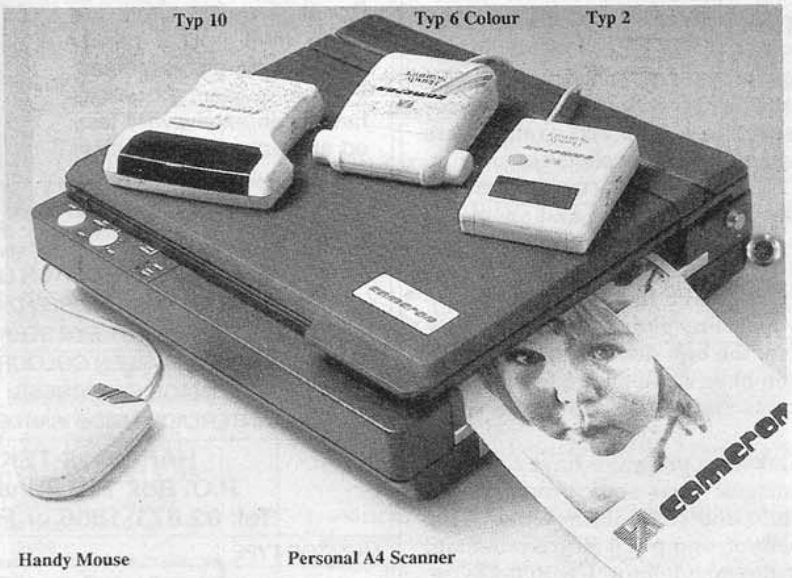
Full palette control is included, enabling you to fine tune the resulting image using the usual RGB slider controls. Using the space-bar you can switch work areas, and scan in an additional image. You can then cut and paste between the two scans using the Edit functions.

The print option supports whatever Preferences printer and settings you have selected. The manual suggests you experiment to see which settings are best for your particular printer.

Keyboard short-cuts are included for the Project and Edit menu options.

Overall, the Handy Scanner works well and does everything you would expect from a hand-held scanner. The price seems a little steep - although you do get a three year guarantee. It would be useful to see some improvement in the number of colours or grey shades supported for use in desktop publishing, which would have to be the primary application for such a device.

Distributed by Pactronics (02) 748 4700. RRP $1,495. ❑



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Making it run!

by Alan Stuart

Ever had trouble getting a new program to work? It won't even LOAD right? Untangling the jumble of instructions will be easier with the following hints on making it work.

YOU HAVE JUST spent your life savings and bought that latest game from your favourite computer store. Quickly you rush home, kick everyone off the Amiga, hit the reset keys, and slam the new disk into the drive.

The usual things happen, the drive leaps into action, and then you wait and wait, and wait! Someone in the background yells "Well, where is it?" But still nothing. Oh well. You put the disk back in the torn packaging and race down to the shop. "This program that I paid heaps for doesn't work!" you scream at the poor shopkeeper as if it is his fault. "Have you tried taking out the extra memory expansion?" the shopkeeper replies. "No," you say. "Will that make any difference?"

And so the story goes. This is a fantasy story that is based on fact. Hopefully, this article will help you solve some of the problems that you may be having with software loading and save you frustration and needless trips back to the store.

First off, the programmers of the software that you are buying are a rather strange lot. Some like to impress others by doing strange things - turning the power light off and on while the program is loading. Others just don't read the Amiga Reference Manuals properly to see how things operate, and others do their homework properly and design really friendly software.

The first thing to do is read the program box to see if there is any minimum requirements for the program to operate. The minimum requirements relate to the hardware and software that your machine HAS TO HAVE before it will operate.

Things to look for are:-

1. Kickstart version

● Kickstart is the operating system of the computer. On Amiga 500s and Amiga 2000s, the Kickstart is built into the machine on ROM (Read Only Memory). These machines come with either Kickstart version 1.2 or version 1.3, and cannot be changed easily. The way to identify which Kickstart your machine has, is to turn the computer on without a disk in the drive. When the picture of the hand holding the disk appears, your version of Kickstart is written beside it. With Amiga 1000s, the Kickstart comes on disk and the required version can be loaded. Version 1.1 was supplied with the machine, v1.2 or v1.3 can be purchased from your computer store. Version 1.0 was only released in America, and never released in Australia. Version 1.4 will probably be released before the end of the year (1990 I hope). The high the version number, the less chance of the dreaded Guru Meditations!

The box should indicate something like requires Kickstart v1.1 or use Kickstart v1.2 or higher. What this means is that the software will definitely work under the Kickstart indicated, but may not have been tested under earlier versions. If you are using an Amiga 1000 and you have problems loading or running, try a different Kickstart version.

2. Memory

● The next important thing is memory. All Amiga 500s and 1000s were released in Australia with 512K (Kilobytes) of RAM (Random Addressable Memory). The Amiga 2000 was released with a minimum of one megabyte. The Amiga 1000 was released in America with only 256K. Once again we got a better deal than the Yanks!! Most software packages will indicate the minimum memory required. For most games, this is usually 512K. However, some of the newer games, desktop publishing software, drawing programs, and business programs require one megabyte or more of memory to operate. Therefore if the package says require a one megabyte Amiga and you only have 512K, the program is not going to work.

The other problem is too much memory. A lot of programs, especially games, will only work with a clean machine. That is, no extra memory. So, the next thing to try if your software isn't loading, is to disable any extra memory. This may be done by flicking a switch, or physically removing the extra memory.

WARNING: Always make sure the power to the computer is OFF before unplugging or plugging anything on the Amiga, or serious damage can be caused!

The final part about memory is the amount of 'CHIP' memory. 'CHIP' memory is responsible for displaying the graphics on the screen. Until recently, the first 512K of memory on all Amigas was 'CHIP' memory. Any extra memory, whether 512K or 8 Meg, became 'FAST' memory. Commodore has released a new 'Super Fat Agnes' IC (Integrated Circuit) that can give your computer one meg of 'CHIP' RAM. This IC is fitted to newer (since about September 1989) Amiga 500s & 2000s, but is set-up in 512K 'CHIP' memory mode. Your local computer store can arrange to have these machines changed to one meg 'CHIP' mode for a small price. Also, the IC can be fitted to older Amiga 500s and 2000s for slightly more.

The problem with one meg of 'CHIP' RAM is that, once again, some programs will not work. If you have your Amiga modified for one meg 'CHIP' memory, then arrange to have a switch fitted to switch back to 512K when needed. In future times, there will be programs that state on the packaging 'Requires one meg of CHIP memory'.

3. Write protect tabs

● Some programs will not work if the write protect tab is not in a particular position. Some require the disk to be write-enabled, others require the disk to be write-inhibited, and others couldn't care less. Recording a high-scores file or reading copy protection may require you to change the tab to the opposite position it is currently in.

4. Extra disk drives

● Next, we come to disk drives. Once again, check what is written on the packaging. If the program requires more than one drive, this should be indicated. However, some programs (usually games) will not operate with an additional drive plugged in the computer - this is sometimes because the extra drive consumes needed RAM. So, switch off and try disconnecting the drive, or switching it off if a switch is fitted.

5. Resetting the computer

● The final point is the resetting of the computer. The easiest way to reset the computer is a Warm Boot, that is pressing the CTRL-LeftAmiga-RightAmiga (or on some Amiga 500s CTRL-C=-RightAmiga (that is the CTRL key, and the keys on either side of the SPACE bar)) at the same time. However, some software when inserted detects that the machine has only been warm booted and will not load. So, this means switching the machine off for at least 30 seconds, and then switching on again.

The best method of getting the software to run is to switch off the computer, take out any extra memory (unless the package indicates otherwise), disconnect any extra disk drives (unless the package indicates otherwise), switch to 512K of 'CHIP' memory (unless the package indicates otherwise), and disconnect the printer. Now turn the power on, and insert the program with the write protect tab set to INHIBIT. See what happens. If no luck, remove the disk, turn the computer off for 30 seconds, power on, set the write protect tab to ENABLE, and insert the disk again. If it doesn't work this time (and you have tried different Kickstarts if you are an Amiga 1000 owner), then there is a good chance that there is something wrong with the program and now you can take it back to the shop.

If the program does work, try plugging in your extra memory, or disk drives (with the power OFF!) and note on the disk label what you have to unplug to get the program working.

Your local computer shop, or user group, should be able to have a power switch installed in your extra drives to turn them off and save you the problem of unplugging them. Also, they may be able to modify the startup-sequence of the program to disable any extra memory if that is required. This will save the trouble of unplugging the memory all the time.

So, the thing to remember, is ALWAYS try your machine as a clean machine and the minimum requirements before returning the software to the shop. This way, you save yourself and the shop a lot of trouble. If you still have problems, have a talk to the man in the shop. If you are prepared to put in some time to help yourself, then the shopkeeper is bound to be a lot more helpful.

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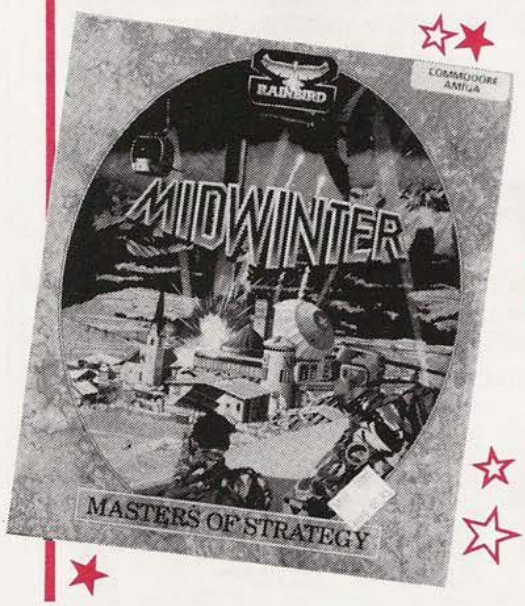

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F-29 Retaliator	●		
Fighter Bomber	●	●	●
Castle Master	●	●	●
Champions of Krynn	●	●	●
Impossimole	●		●
Their Finest Hour	●	●	
Indianapolis 500		●	
Leisure Suit Larry 3	●	●	
Teenage Ninja Mutant Turtles	●	●	

Title	Amiga	PC	C64
Pro Tennis	●	●	●
Kick Off 2	●		
Pirates	●	●	●
Bars and Pipes	●		
688 Attack Sub	●	●	
Sherman M4	●	●	●
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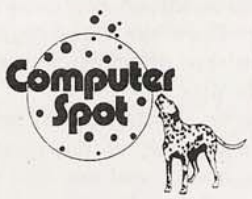

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Getting serious about C128 backups - Fastrac/128

Commodore's C128 is a great machine. Not surprisingly, there are a lot of very happy users out there happily wordprocessing and data crunching away. Until now, there was no easy way to make a fast, reliable backup of important data. Fastrac/128 fixes that problem - Phil Arntzen reports.

MOST 128 OWNERS that I know bought their machine because they were happy with their 64, EXCEPT 80 columns would be nice, so would more storage, easier graphics and sound, and a faster clock speed. The 128 fits all these needs, and is not as traumatic as moving to an Amiga, IBM clone, or whatever.

It is a pity, then, that until recently, only business software was available to use the extra features. Even copy programs in the main ignored the extra memory. *Fast-Hackem* had a data copier, but for reasons known only to Commodore, the single copier would not work with the upgraded (V 5) ROM, which replaced the earlier, bug-ridden V 3 ROM. If you were financial enough, two 1571s would make life bearable. That was, if you could buy a 1571, as they were dropped when the Metal Case 128D was released. Nobody seemed to want to know about backing up data disks swiftly.

Fastrac/128 has changed all that. It is written by that brilliant programmer Mike J. Henry, who brought us *Disector*'s 1 & 2, and later, the *Fast-Hackem* series.

Before I go any further, it is not for backing up protected software. There are already enough programs that do that.

Fastrac/128 is written purely for rapid, error-free backups, file copying, and other disk housekeeping chores. This is precisely the gap in the market that was long overdue to be fixed. Most 128 owners that I know are running double-sided disks in *Superbase*, *Geos* and the like, and need fast, reliable backups.

Why a data copier, and not a nibbler? If an error occurs on a work disk, it can sometimes hang up the program, or, in the case of *Superbase*, require an experienced operator to recover the data, by exporting the data either side of the error, and either attempting a repair by a disk editor, or by manual records, replacing a faulty record.

A nibbler will merely make an exact copy, warts and all, and in some instances, throw in a few of its own. A data copier, on the other hand, will read an error riddled disk, and write an error-free copy.

This doesn't mean that you are out of the woods yet, unless you are very lucky. In most cases, the error may not have been the checksum, rather an error in the data itself. This will make the record readable, but it may need correction, as a letter or two may have changed in the process. This is far easier to repair from this point.

The modules

● All modules except the monitor allow access back to the Main Menu, Directories, and disk commands. Those who do not own an 80 column monitor can still use it in 40 columns mode, but some operations will have screen blanking for maximum speed. The main menu is impressive looking, but uncluttered and functional. Pressing keys 1 - 6 will load the desired module.

The data-copier comes with the option of single or dual 1541, and 1571 copiers. Once loaded, the destination drive type can be changed, for those who may be running a 1571/1541 combination. If so, the copier will automatically bar out the both sides/bottom side options, leaving a single sided (top) copier. The copier auto-senses all it needs to know, and will run in 2 MHz mode if the copier was booted with the 40/80 column display key down. It will auto-sense the presence of a ram expander, and will recognise all of them (1700-128K, 1764-256K, 1750-512K), and use the extra memory. It will also sense if there are 64K video chips installed, (standard on metal case 128D) and use these as additional storage.

Empty tracks are sensed, resulting in fewer passes with half full disks. If a ram-expander is installed, most disks are backed up in one pass, eliminating the need for a second drive. Write verify can be toggled off, gaining more speed if wanted, and all read errors will still be reported. I personally would only do this on non-important data, and good quality disks, where the chance of a write error is minute.

The fast file copier is very intelligent, automatically setting the interleave to its optimum for the destination drive. This is 1541-10, 1571-6, 1581-1, for standard drives. Systems such as Jiffy-Dos, which prefer smaller interleaves, can have their optimum interleaves set on the menu. Sub-Directories are supported on both the source and destination drives, for 1581s. A unique feature of this is that access is offered beyond the 1st level of sub-directories, without having to select in one level at a time, as is the case with the *Maverick* copy program.

All extra memory is utilised, and the buffer size is 2128 blocks with the 1750 Ram Expander (532K buffer), handling most tasks in one pass. The destination disk can be fast formatted from the menu (8 seconds for a single sided disk), and files can be scratched from either drive, without having to toggle the source drive. Either directory can be run up, and disk commands can be sent to either drive. All files can be (T)oggled on from the copy menu, or selected with the space bar.

The directory editor is a real gem, and works on all drives. Sub-directories can also be edited on 1581s. An input/output buffer system is used, in which files can be selected by space bar or (A)ll files. Selected files can be sorted, or moved to the other buffer. Once the input buffer is empty, the finished directory can be written back to the disk.

Confirmation is required, to prevent accidental destruction of the directory. When (E) is chosen, you are able to rename the disk, change the ID with up to five characters (Cosmetic only), alter the filename, filetype DEL, SEQ, PRG, USR, REL, SUB (cosmetic change only), and lock or unlock the file. Of course, changing the filetype does not affect the file itself. I have not found a better directory editor to use.

A 1581 duplicator is available in both single and double drive modes, and is the same to operate as the other data copiers. The extra memory is supported, allowing a 1750 equipped 128 to back up a full disk in just two passes. A 64K equipped 128 can do this task in five passes. This is much better than the 10 passes, 10 minutes copier that comes with it.

A 1571 MFM copier option is available to most users. Due to hardware incompatibilities, it will not run on the internal drive of the metal case 128D. Those with the plastic case model, or with an external 1571 drive are O.K. The menu allows access to both Commodore and MS-DOS directories, and allows formatting in MS-DOS on the drive.

The filler byte is user selectable, with

a default of $F6. Both MS-DOS mode, and track index can be toggled on/off. CP/M disks can also be backed up this way. The device number can be toggled, if needed, by those who have the metal case 128D with an external 1571.

Two machine code monitors are supplied, residing at $1300-$2AFF or $6000-$77FF, as required. The monitor is an adaption of the Super-C64 Mon, but has the valuable addition of The MMU status, and Bank selected in the register display. This makes it the best monitor by far for the 128, as you don't have to Memory read these two important values.

Drawbacks

● I would like to have seen a partition creator for the 1581 drive, similar to the one in 1581 Toolkit. The directory editors are almost identical, and they are from the same company. I feel that this should have been there as either a stand-alone module, or on the file copier menu. This is a criticism that really is aimed at all the current copiers, as none of them enable you to create a partition from the file copier menu.

Also, a create Autoboot option would be great, giving the option of a 128 mode Autoboot, or an Autoboot that would go to 64 mode, then Load"*",8,1 with the program selected being automatically shifted to the beginning of the directory. It can be done manually easily enough, so it couldn't be too hard to be done. The Geos demo disk is a good example of a 128 Autoboot to 64 mode, then running a program.

This is an exceptional package, and a mandatory purchase for all 128 owners. The auto sensing of memory makes it impossible to forget using the memory attached, and the speed of copying makes it second to none.

Although *Fastrac/128* is not difficult to back-up, do not be tempted to rip it off. The lack of software for the 128 is a consequence of lack of software sales, and as such, tell your friends to buy their own copy. That way, we'll see some more software from this, and other programmers.

Review copy from Briwall Australia, Ph (06) 288 0131. Price $46.00.

SPEEDS: Times in brackets are *Maverick* Copier (for comparison only) As *Maverick* does not do a double sided data backup for 1571 disks, no comparison time is given for these. These times were done by stopwatch, and are read/write times only, and do not include time taken for any disk swaps, and are expressed in MINUTES.SECONDS, eg 1 minute.03 seconds.

Single 1541 Drive (Single side 1571 times)	2.07 no verify
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Amiga Desktop Video Guide

by Andrew Farrell

IN THE USUAL sky-blue Abacus cover, Guy Wright - the frizzy haired founding editor-in-chief of *Amiga World* takes a long stroll around the NTSC world of desktop video in America. However, despite the slant toward a video standard disappointingly poorer than our own PAL television, the Abacus *Amiga Desktop Video Guide* is an invaluable addition to the serious videophile.

The book begins by tackling the various terms likely to be encountered. A strong warning under the definition of PAL states that PAL and NTSC equipment and software are not compatible. Too true - when buying for video use, be sure you get PAL. NTSC versions of programs such as *Elan Performer* are distributed and sold in Australia. NTSC software will not allow graphics to be displayed in a large black band covering about one fifth of the bottom of your display. NTSC software is therefore fairly useless for serious video work.

Chapter two examines the various video tape formats, and assorted players and cameras. Concepts such as Flying Erase Heads are clearly explained. Most of the hints and tips are perfectly valid for PAL systems - although there are some gaps in the range of hardware mentioned. (Have a read over back issues, and in the *1990 Amiga Annual* for articles by Peter Ward on the subject of Desktop Video for further local application.)

The section on Genlocks covers all the principles of operation very well - however, it has dated very quickly, and there is no mention of some of our local favourites such as the Neriki desktop - which is available in the United States. Another new entry which is excellent value comes from ACRE Industries in South Australia. At around $800 the ACRE AGS-20 is excellent value considering the high quality obtained.

Digitising techniques are explained wonderfully, along with frame grabbers and buffers in chapters five and six. Once again, there is little local relevance when it comes to specific models being mentioned. Many of the grabbers and buffers we see in Australia are sourced from the United Kingdom - such as Vidi, and SuperPic.

A brief software guide follows, with some handy tips on what to do and not do to make a success of your video production. Animation is covered briefly - once again, the information is now rather out-of-date with so many new animation titles released recently - and even more about to arrive. However, many of the basic ideas are very well explained.

Chapter Eight looks at video-titling. Everything here is worth careful consideration, and I found some great tips on keeping your titles in a workable format. All the programs discussed are available for PAL application. Following the production process, Guy Wright covers the music side of a video too. A lot has happened since he wrote this section, especially in the field of MIDI music.

The remaining chapters contain the really meaty practical advice on putting all the elements together, as well as a look at digital video effects and advanced techniques. There's also an indepth rundown on the different types of hardware add-ons which can improve results even more, and a guide to availability in the United States.

Overall, the *Amiga Desktop Video Guide* contains some very practical and useful information. Be careful about some of the product recommendations - and check around for new releases before following purchase advice. Guy's advice is great for getting a grounding in the terms and processes of desktop video production. Once you have all your equipment together, you'll refer back to his advice many times.

Abacus books will soon be easier to find thanks to a new bookstand which should be appearing in your local Commodore dealer about now.

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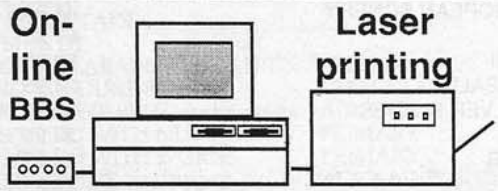

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C64 Graphics & Sound

Programmable Characters

by Greg Perry

Yet another instalment for C64 BASIC programmers. By now you'll have got your feathers wet - are you ready for some custom programmable characters?

All Commodore computers have two complete character sets available from the keyboard; upper case and graphics, and upper and lower case. Each set contains 256 characters but half of these are repeated characters with the foreground and background colours reversed (reverse field).

The C64 stores the actual pattern of dots which make up each of the 512 possible characters in a "character generator" ROM. This is a 4K block of memory starting at location 53248.

Let's have a closer look at how characters patterns are stored and displayed on the screen. Then we can design some new characters of our own.

Characters may be displayed on the screen in two different colour modes. These are:

1. ***Standard Mode***: where each dot can be either in the character colour or the background colour.

2. ***Multicolour Mode***: where each dot can be one of four possible colours.

For the present discussion, we will only use the standard character mode and consider the characters to be drawn on a blank screen (as with the Commodore PETS). Multicolour mode will be discussed later.

If you look closely at each character on the screen, you will see it is made up of an eight by eight pattern of dots. Each of these dots is called a pixel. (Think of them as small light bulbs.)

Type a capital A and look closely.

It is made up on this 8 X 8 grid by Figure 3.1 (below).

ROW	COLUMN 7 6 5 4 3 2 1 0		BITS		DECIMAL
0	. . . * * . . .	=	00011000	=	24
1	. . * * * * . .	=	00111100	=	60
2	. * * . . * * .	=	01100110	=	102
3	. * * * * * * .	=	01111110	=	126
4	. * * . . * * .	=	01100110	=	102
5	. * * . . * * .	=	01100110	=	102
6	. * * . . * * .	=	01100110	=	102
7	. . . .	=	00000000	=	0
Decimal BIT Value	128 64 32 16 8 4 2 1				

Each pixel (or light bulb) may be either on or off. By the convention on = 1 and off = 0, each row can be converted into a pattern of 1s and 0s as shown on the right-hand side. (That is, eight bits for each row.)

We are about to enter the world of binary numbers. If you did not read the section on binary in Chapter 1, section 1.4, now would be a good time!

Since binary numbers are to base 2, the numbers on the bottom of each column above represent the power of two for bit in that column. The number equals 2^BN where BN is the bit number 0-7. The next step is to convert each binary number to a decimal value. The first row is made up of

```
0x128+0x64+0x32+1x16+1x8+0x4+0x2+0x1=24
```

The other rows are calculated in the same way to obtain the corresponding decimal value for each row.

From Chapter 1, section 1.4, you will remember that eight bits are grouped together into a block, called a byte. Each memory location within the computer's ROM and RAM holds one byte.

Using this system, storage of our character pattern for "A" requires eight rows of eight bits meaning eight bytes of memory. Therefore to store the two complete character sets with 256 characters per set, each character eight bytes long, takes 2 x

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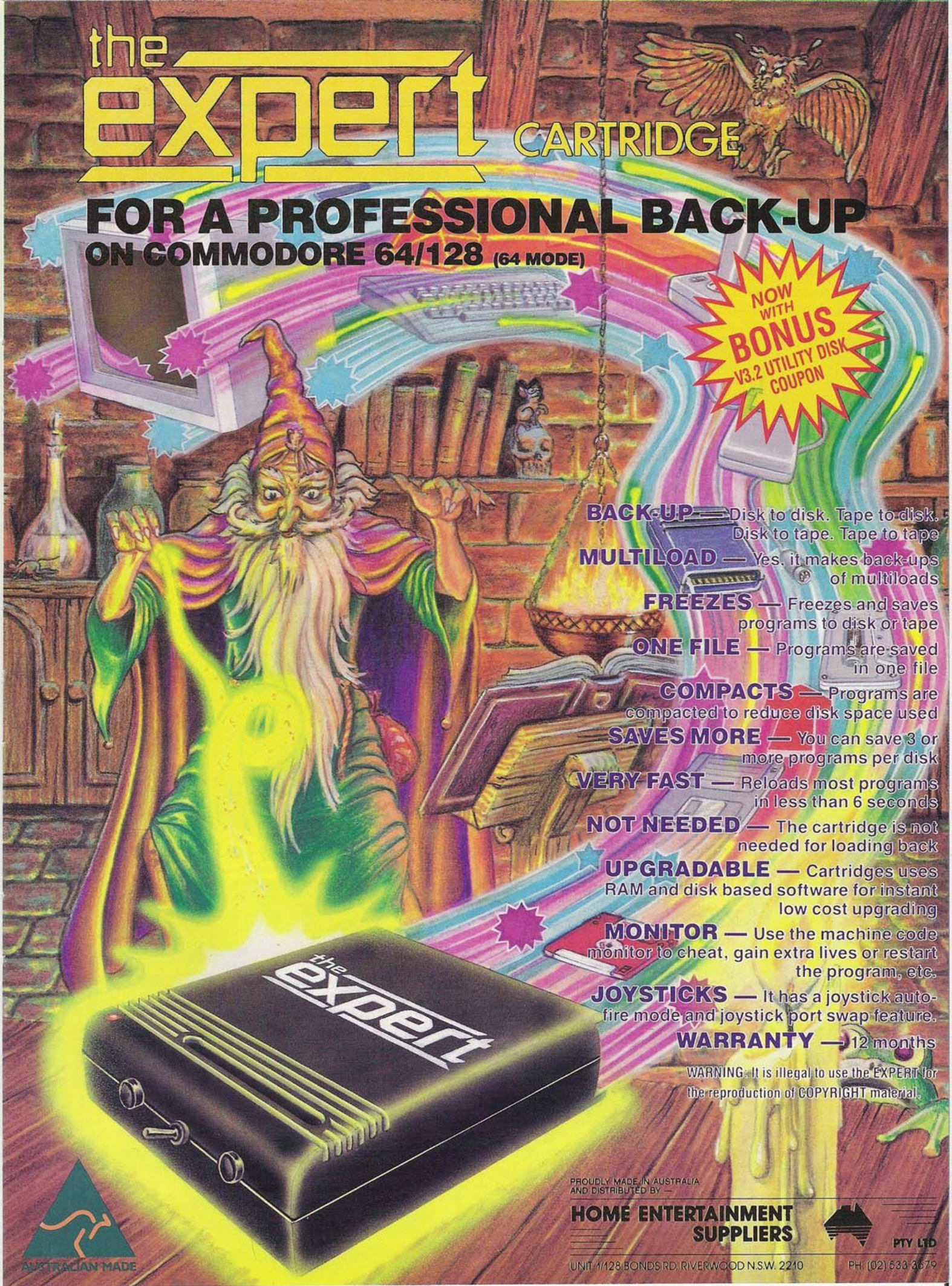
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2048 bytes or 4K of ROM. This ROM is located in memory between location 53248 and 57343. (The C64 accesses only one character set, a 2K block, at a time.)

If we look at this character generator ROM, somewhere we will find eight successive bytes containing the numbers 24, 60, 102, 126, 102, 102, 102, and 0 giving our pattern for "A". In fact the actual position in the ROM will be related to the screen character code for the character.

Where is all this heading?

An important feature of the C64 is that the user can tell the computer to select the pattern for each character not from its ROM area but from an area in RAM. Since RAM memory can be changed by the user, a completely new character set can be defined with appropriate programming.

To understand how this can be done, first we must take a brief look at the operation of the VIC II chip. The VIC II chip controls the organisation of all the video output - the RAM (or ROM) locations of the screen, sprite, and character information.

The VIC II chip can access only 16K of memory at any given time. In the computer's total memory of 64K, there are four such areas called BANKS, numbered 0-3. The screen RAM, the character dot patterns, and the sprite data must all be in the same BANK of RAM.

Normally, BANK 0 is selected. This is the area of RAM from 0-16383. If you look at the memory maps, the screen normally lies from 1024-2047 (including sprite pointers). However, the character generator ROM is permanently located at 53248 upwards and not in the required area. How can this work? The C64 takes care of the problem in an interesting way. In some BANKS (0 and 2), a copy or "image" of the character ROM appears. In BANK 0 this image appears at 4096 upwards. (It is "invisible" to the BASIC RAM which occupies the same location!)

Let's hope that you are not too confused by now. We'll continue with an explanation of how the VIC II chip locates everything.

There are three pointers in higher RAM which control the BANK selection‹v‹and the screen and character locations. These are in two memory locations.

```
1.57567BANKselection
2.53272Screen/Characterlocation
```

We will leave BANK selection until later, leaving it set as normal (to BANK 0), giving access to RAM at 0-16383.

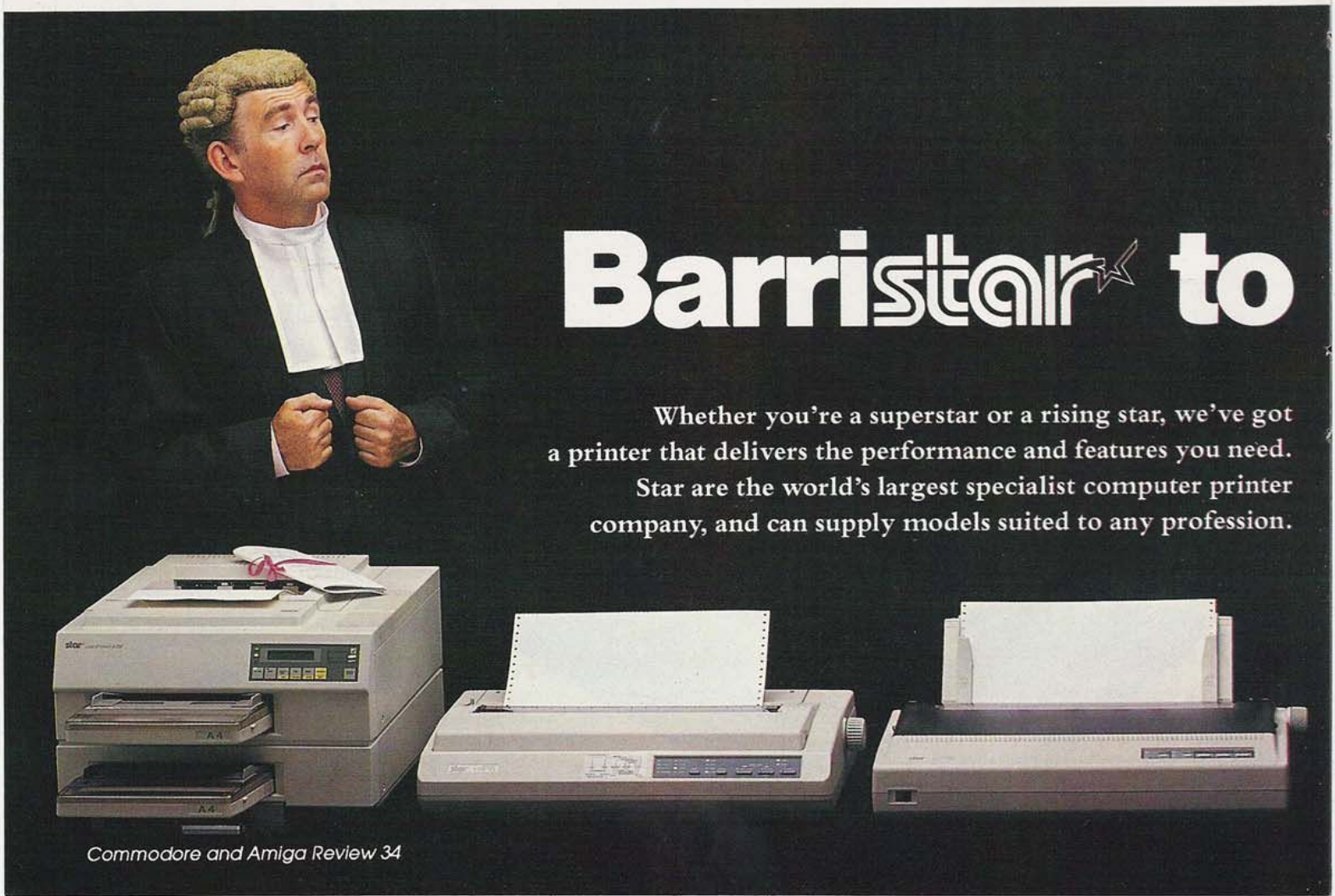
Location B at 53272 contains two half bytes. The left half, bits 7-4, encodes the screen location and the right half, bits 3-1, controls the location of the character patterns. (Bit 0 is not used and always set to 1.)

A simple demonstration. When the C= and shift keys are pressed together to change between character sets, what is actually happening is that the pointer in bits 3-1 of location B is changing between the two 2K "images" of the ROM. This is equivalent to

```
POKE53272,21:uppercase/graphics
POKE53272,23:lowercase/uppercase
```

Try it.

Beware: This location also controls location of the screen memory. Try some other value and the screen will become a meaningless series of dots! Try it. (Use RUN/STOP RESTORE



to return to normal.) Character sets may also be swapped by PRINT CHR$(14) and PRINT CHR$(142).

In a similar manner we can change this character pointer to a user defined character set in RAM. Let's see what happens if we select the character set not from the image at 4096 upwards but from another area of RAM, at 12288 upwards, for example:

```
POKE53272,29
```

The screen display promptly turns to meaningless dots! Why? Because we are now selecting the character dot patterns from location 12288 upwards but there are not yet any specific patterns in this area! Use RUN/STOP RESTORE to reset things to normal.

We must create a new set of dot patterns for our characters. This is not as difficult as it may seem at first, since it is not necessary to create a totally new set of 256 characters. If the old set (or the part we wish to use) is transferred to the new RAM area, we may selectively change only those we want.

To transfer the ROM character set starting at 53248 to the new location at 12288 is made somewhat complicated by the way the C64 operates. The character ROM actually underlies the SID and VIC II chips and is not normally available. That is, a PEEK to the location will read one of the other chips and not the character ROM.

To access the character ROM, first we must switch the RAM out and the ROM in. This is done in the input/output selector of the main 6510 processor in location 1 by

```
POKE1,51
```

After we have read (PEEKed) the character ROM, the C64 must be reset to normal operation by

```
POKE1,55
```

There is one problem. POKEing this location upsets the C64. Fifty or sixty times a second the C64 performs an operation called an interrupt, where the computer temporarily suspends whatever it is doing and proceeds through a number of operations including scanning the keyboard, updating the clock, and so on. If this pointer in location 1 is not set as expected when an interrupt occurs, the computer normally "crashes", meaning it has to be turned off.

Whenever location 1 is to be changed by a user program, first the interrupts must be disabled. This is done by

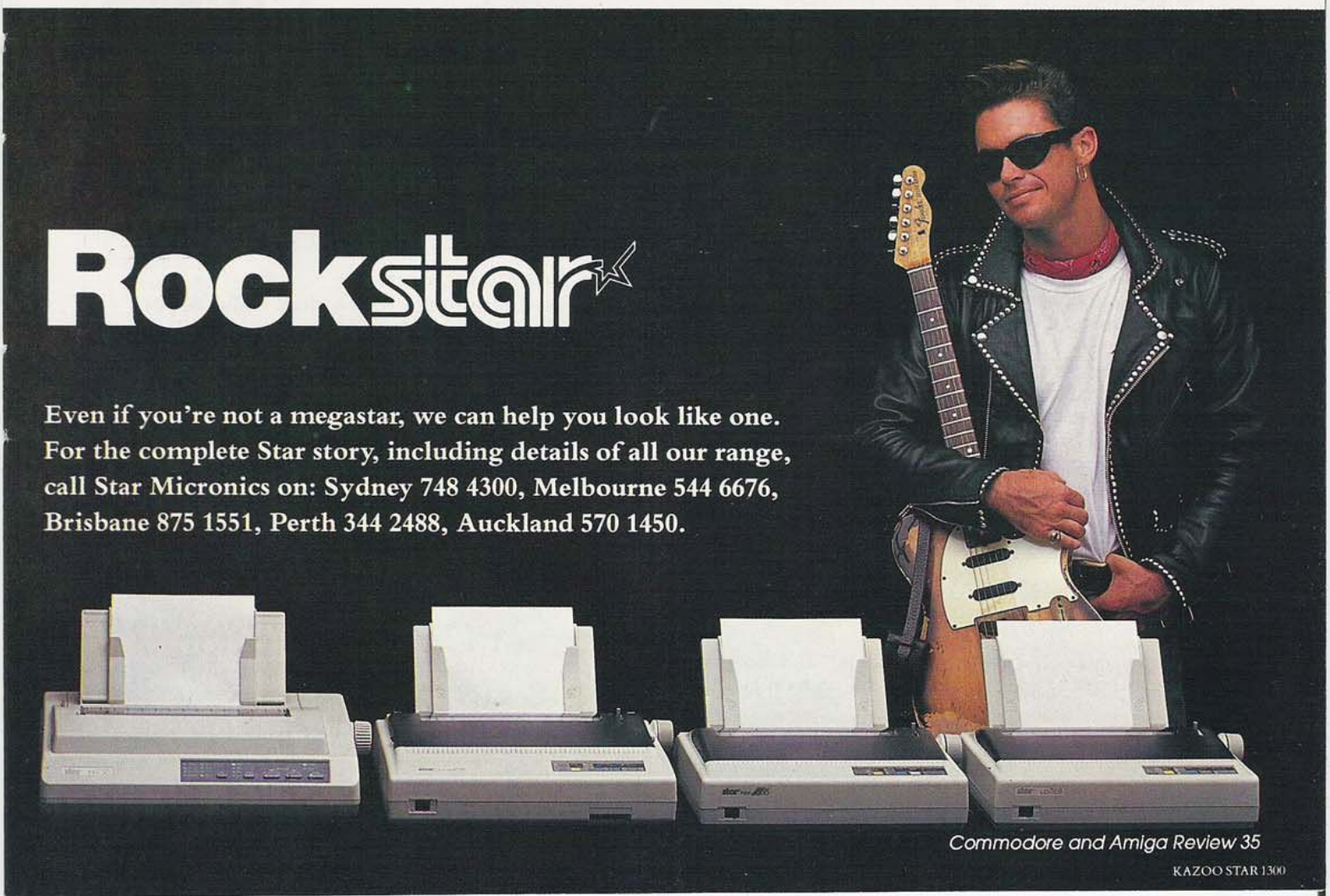
```
POKE56333,127(interruptsoff)
```

When the desired operation is completed, the interrupts must be returned to normal by

```
POKE56333,129(interruptson)
```

If this is not done, the keyboard will not function.
The steps in reading the character ROM are then

1. Disable interrupts
2. Switch RAM out and ROM in
3. PEEK ROM locations
4. Switch RAM in and ROM out
5. Enable interrupts



This is all done in the following program which will move the first 128 characters from ROM to RAM at locations 12288 upwards. It can easily be adapted to move any number of characters.

```
Program:MOVECHARACTERS

10REM(C)GREGPERRY,BRISBANE,1984
100REMPROGRAMMABLECHARACTERS
110POKE53280,2:REMREDBORDER
120PRINT"[CLR,DOWN4]PLEASE[SPACE]WAIT"
130IN=56333:CB=12:B=CB*1024:CR=53248:CP=53272
140POKEIN,127:REMINTERRUPTSOFF
150POKE1,51:REMROMIN
160FORI=0TO128
170FORJ=0TO7
180POKEB+I*8+J,PEEK(CR+I*8+J)
190NEXT:NEXT
200POKE1,55:REMROMOUT
210POKEIN,129:REMINTERRUPTSON
220POKECP,(PEEK(CP)AND240)+CB
230POKE53280,7:REMYELLOWBORDER
```

NOTES

1. CB is the character base block number (in 1K increments) and B (=12288) is the actual RAM starting location of the new characters.

2. Lines 140,150, 200 and 210 switch the interrupts and ROM/RAM as discussed above and must be used in this order!

3. The character pointer to our new RAM area at 12288 is set in line 220 within location 53272 with the general formula

```
POKECP,(PEEK(CP)AND240)ORCB
```

which ensures that the other bits of the byte which control the screen RAM location are not changed.

This could have been done more simply by

```
POKECP,16+CB
```

However, until you are sure of the correct numbers the first method is safer as it simply sets the required bits (3-1) while leaving the others unchanged.

RUN the program.

Nothing has changed. Why?

Because the C64 is still using the same set of characters, simply moved to the RAM.

To change any given character pattern, first we must find out where it is stored in the RAM area. Characters are stored sequentially in a table which is related to the screen character code. We can either look up the screen code for the required character or calculate it from the Commodore ASCII value with the logical operators by performing the following calculations.

```
ASCII(A)toscreencode(S)
S=(AAND63)+(AAND128)/2
```

and screen code (S) to ASCII (A)

```
A=(SAND63)OR(-64*((SAND63)>32)OR((SAND64)*2)
```

For the character "A" the screen code is 1 and since each character uses eight bytes the pattern for "A" starts at location

```
12288+8*1=12296
```

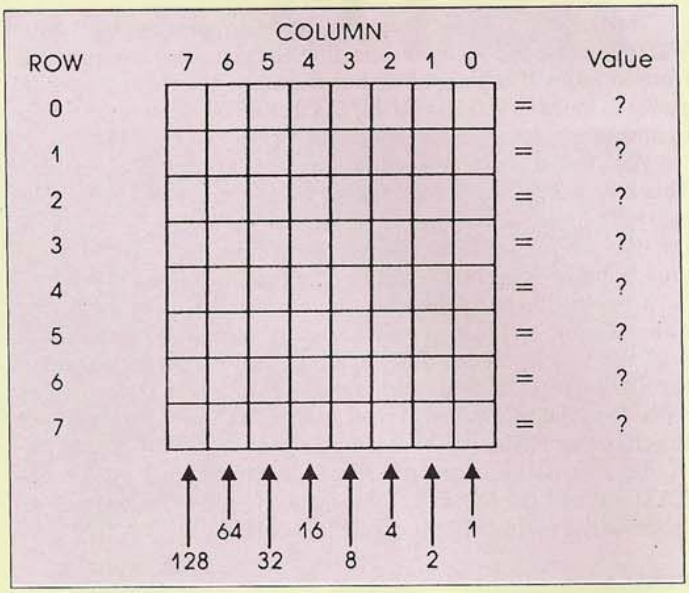
and extends for eight bytes to location 12303

Exercise

To create a new character pattern.

Draw a new character pattern on the eight by eight grid.

Figure3-2



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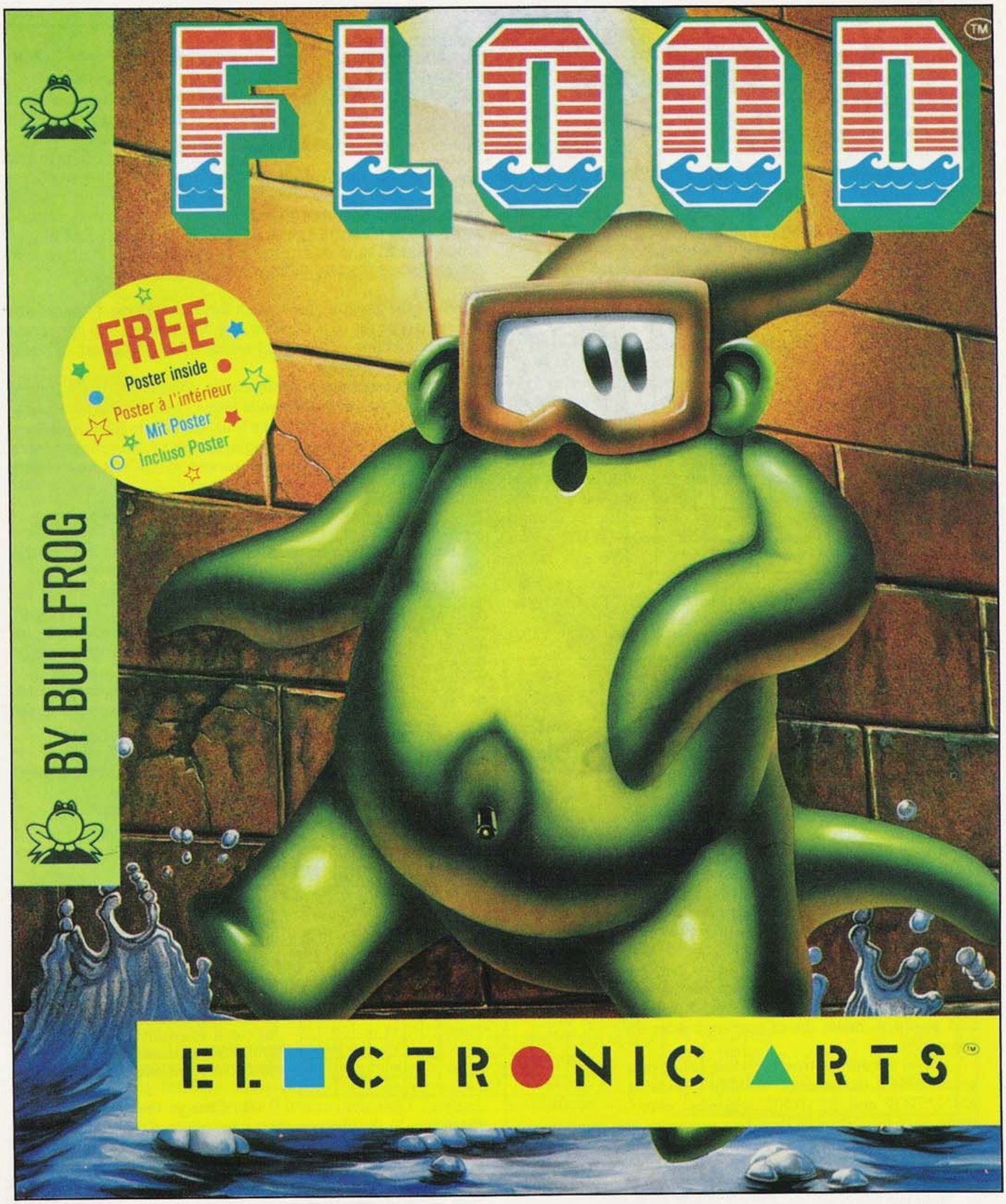

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For the eight rows add up the values of the eight bits in each row to obtain the eight byte values.

Put these numbers into our eight successive locations using POKE statements such as

```
POKE12296+RowNumber,RowValue
```

Once this is done, every time the "A" key is pressed the new pattern will appear instead.

Worked example: create a right arrow (which is not available on the keyboard). (See Figure 3.3, below).

ROW	7	6	5	4	3	2	1	0		Value
0					*				=	8
1						*			=	4
2							*		=	2
3	*	*	*	*	*	*	*	*	=	255
4							*		=	2
5						*			=	4
6					*				=	8
7									=	0

Put this character pattern in place of the "A" by directly entering

```
POKE12296,8
POKE12297,4
POKE12298,2
POKE12299,255
POKE12300,2
POKE12301,4
POKE12302,8
POKE12303,0
```

Now, every time the "A" key is pressed, the right arrow character will appear. (Entering a new pattern is more usually performed by READ and DATA statements.)

Compare this new character with the normal left arrow character (on the immediate left of the RESTORE key). See the difference? Our new character is much thinner. Generally, Commodore use a minimum of two dots for each line to give the character more definition. This is partly to minimise colour distortion and partly to make the characters bolder on the screen.

If you encounter trouble when using programmable characters, usually pressing RUN/STOP and RESTORE will reset everything back to normal. If that does not work, the computer will have to be turned off and on again.

Still confused? The following program will change any three chosen characters to give some interesting patterns.

Add the following lines to the above program.

Program: NEW CHARACTERS

```
10REM(C)GREGPERRY,BRISBANE,1984
240FORT=1TO3
250INPUT"OLD[SPACE]CHAR";C$
260REMCONVERTASCIITOSCREENCODE
270A=ASC(C$):S=(AAND63)+(AAND128)/2
280P=B+S*8:REMCALCULATECHARACTERBASE
290FORI=0TO7
300READCC
310POKEP+I,CC:REMPOKENEWPATTERNS
320NEXT:NEXT
330POKE53280,14:REMBLUEBORDER
340END
350REMDATAFORTHREECHARACTERS
360DATA0,24,60,126,255,24,36,6
370DATA24,20,20,18,48,112,96,0
380DATA60,66,165,129,165,153,66,60
```

RUN the program and select three characters. Now, whenever you type the old character, the new pattern will appear instead. For example, change characters "A", "O", and "E", and then LIST the program.

When designing programmable characters, if the image you wish to put on the screen is larger than one character, simply split the image up into, say four, characters then print them together. There's a nice example of this in the Programmer's Reference Guide (p. 114) which creates a "cat" character using the four keys "".

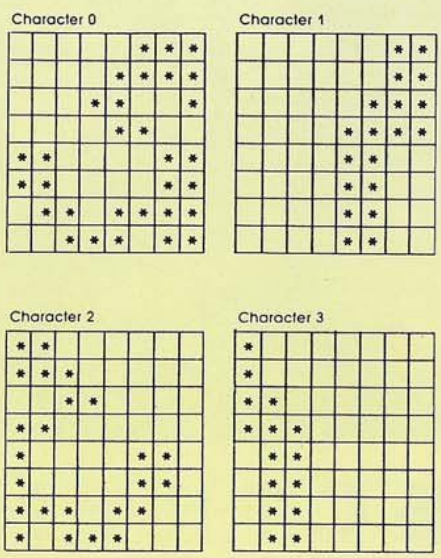
Exercises

Read the following section on saving user character sets then attempt the following exercises.

1. Design your own set of five characters and modify the above program to implement the changes.

2. Take the 25 alphabet characters and modify them to provide a completely new but still recognisable set. This set can be used creatively for your own programs.

3. The following four characters create a large image. First, calculate the byte values for all the 32 bytes.



Secondly, modify the above program to display these characters by

```
240FORT=1TO4
250REM
260REM
270REM
280P=B+T*8.
340PRINT"[CLR,DOWN10]"TAB
(20)"AC"
345PRINTTAB(20)"BD"
```

and add new DATA statements containing the new character information you calculated above:

```
350DATA-yourdataforcharacter0
360DATA-yourdataforcharacter1
370DATA-yourdataforcharacter2
380DATA-yourdataforcharacter3
```

4. Change the position of the characters in the above exercise and replace the characters "0", "1", "2" and "3", for example.

5. Move the new image of four characters about the screen.

6. Draw a 16 x 16 grid and design another large image. Divide the grid into quarters and create the required characters. Once the new characters have been entered, design a program to move the image about the screen.

7. Design a larger image on a 32 x 32 grid and create the 16 characters required. ❑

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C64-Programming

Playing the D-Strings

by Daniel M Henderson

THE COMMODORE 64 is a great machine to program. It's capabilities are still being explored. However while reaching for your dreams you may hit memory limitation. So you wrestle with the operating system.

You play hide and peek with the memory pointers, go to the rule books to find out just how you can break the rules. And then, finally, you get it doing the theoretically impossible AGAIN. Well I suppose that's why it is such a lovable computer.

In fact, with cunning programming, you can get the C64 doing things better than hulking mainframes were achieving not so many years ago.

Four memory strategies

● There are four strategies you can employ to successfully have your way with the C64. First there is hardware expansion. If you were lucky enough to purchase a RAM Expansion Unit while it was on the market you'd have plenty of extra memory. However not many other people could run your program.

Secondly you can use the disk drive as a form of virtual memory. Read data and new program code from disk as needed - giving you a 230K+ computer. *GEOS* and most other great C64 software use this strategy. I'd like to look at how you can get the best out of disk memory from BASIC in a future article.

Thirdly there is software memory expansion. Mostly this means accessing the 16K of RAM "hidden" by the concurrent memory addresses of read only machine language code. Important stuff like the BASIC language, the Kernal, Input/Output Devices etc. Its there waiting to be plundered, but that's another story.

Fourthly you can play the operating system and beat it at it's own game. You can do this completely from BASIC with a few peeks and pokes along the way.

Tactics within this strategy are as follows:

a) consolidate your program code
b) DIMension your arrays wisely and
c) tame dynamic strings so they do your bidding without wolfing up your free memory.

String variables are crucial to any programming that handles words rather than purely numeric data. When it comes to disk files, strings are used for numeric as well as alphabetic storage. So getting strings under control is of vital importance. Let's look at the care and domestication of Commodore strings.

How long *is* a piece of string?

● The storage of string variables is more complicated than that of numeric variables. Floating point and integer variables each need the fixed number of seven bytes to store their name and value.

String variables on the other hand could be anything from zero to 255 bytes long. To accommodate them the operating system just records their name, length and starting address in the variable table (See Table 1).

Different BASIC dialects handle the length of strings question in different ways. Atari BASIC for instance, requires you to DIMension every string before you first use it. This sets a maximum value for the string's length. Atari strings never move from the place they are assigned at initialisation. Some other computer languages also follow this less flexible line.

By contrast BASIC dialects of Microsoft derivation allow more freedom to strings. These dialects have been used in IBM, Commodore and Apple computers.

What is the price of this freedom? As we will see, it can be high in both memory wastage and program speed reduction. The good news is that in most cases you can eliminate those costs with the right techniques, and retain or enhance the flexibility.

First let's study the life cycle of the string variable. In Commodore BASIC V2 most strings are initially placid, home loving creatures. They just sit there where you put them in your program.

Whenever the system wants to use one of these "static" strings it looks up their address in the variable table sitting above your program. This points to its first byte within the program code.

If the length or contents is changed (or if you suggest change to the system) then a copy of the new string is flashed to the top of user memory. It "builds down" below strings that have been initialised or changed before them. (See Table 2). The pointer in the variable table now points to the first byte of this new "dynamic" string. The old string in your program code is now so much filler.

Dynamic strings result from the operation of most string function expressions:

Concatenation: e.g. A$="X"+"Y"; A$=A$+"ZX"; A$=B$+C$. Even A$=A$+"" - that's what I meant by "suggesting change to the system."

Splicing: e.g. A$=Left$(B$,3); A$=MID$(B$,3,1); A$=RIGHT$(B$,7);

Numeric to string conversion: e.g. A$=STR$(X);

Other functions that form D strings are GET and INPUT. Also GET# and INPUT# - which have important implications for disk and tape access. Strings initialised by being made the equivalent of a dynamic string are also D strings.

The phantom strings

● The PRINT command also takes up dynamic string memory in some situations. Whenever you execute a PRINT/splice function such as PRINTLEFT$(A$,10), the system flashes that spliced bit of string to the bottom of strings before it's delivered to your screen. The same with PRINT A$+B$. Well, it's got to have somewhere to sort things out.

However the bottom of strings pointer isn't moved so you're not adding to string memory. We could call these memory neutral entities "sorting images." On the other hand if the PRINT/splice command includes a "+" then you've got a different kettle of fish: e.g. PRINTLEFT$(A$+B$,20).

The system puts copies of A$ and B$ at the bottom of strings and then your spliced bit of string. Fine, but the bottom of strings pointer is lowered to the length of A$+B$. No new dynamic strings are created, A$ and B$ remain static variables: phantom strings are created that take up memory.

Rogue D strings

● Each time a dynamic (or phantom) string is redefined its new incarnation is built onto the bottom of strings and the old incarnation is left behind as garbage. The building down process continues towards the bottom of free memory - that is the top of your array memory.

So each time you perform one of the above operations dynamic string memory increases in an arithmetic progression - a straight line increase. Perform those functions with arrays and within loops and you can take up lots of memory very quickly, and create heaps of useless garbage.

That's only the beginning. There is one function that makes dynamic strings grow like mushrooms in the dark. This function takes up memory in a rising ACCELERATING curve. Let's try a graphic experiment to see what this string beast looks like. Type in and run this little program:

```
10REMTHEWOLFBITES
30SL=255:WOLF$="G"
40POKE53280,0:POKE53281,0
50FORX=1to255
80WOLF$=WOLF$+"R":MW=MW+LEN(WOLF$)
110PRINT"{CMDRE2}"WOLF$
120IFLEN(WOLF$)=SLTHENX=255
130NEXT
150PRINT:PRINT"{CTRL6}"WOLF$:PRINT:
PRINT"USABLESTRINGLENGTH="LEN(WOLF$)"BYTES"
160PRINT:PRINT"{CMDRE2}MEMORYUSED="MW"BYTES"
170PRINT:PRINT"GARBAGE="MW-LEN(WOLF$)"BYTES"
```

This is "exponential" concatenation: the building up of one string by repeatedly adding other strings to the original (growing) string. It would be reasonable to assume that adding one character to a string increases its length in memory by one byte. However you can see from the WOLF BITES that in fact each extra character adds the ENTIRE length of the growing string plus one.

To create a string of 255 characters by adding one character at a time with this method you need most of user memory. For the auditors out there it creates 32384 bytes of garbage. Play around for a minute with the value of SL (string length).

You'll find that to concatenate a string of ten characters (bytes) requires 55 bytes of memory. A twenty character string requires not 90 bytes but 190. A forty character string requires 780 and an 80 character string requires over three kilobytes. Why worry about crunching REMs in your program code if you've got a wolf like that baying at the door?

The following formula returns the memory needed to concatenate a string:

```
M=(SL/IC*SL+SL)/2
```

where SL is the string length and IC is the length of string added at each pass. The formula shows that memory requirements drop as you increase the length of the added string (IC).

String concatenation seems to be recommended quite often as a programming strategy. Considering the way it borrows memory, I wouldn't be surprised if it was invented by a Perth entrepreneur. There must be a better way.

When it comes to dealing with pollution there are two schools of thought: 1) treat or "control" the junk after it has been created or 2) change the production process so that it isn't generated in the first place. First let's look at option one.

Pollutionmanagement

● What happens when dynamic strings multiply to the point that they bang into the top of arrays? Initially it's a soft landing. Computers that implement Microsoft BASICs usually swing in a garbage collection routine at this point.

This resets the bottom of strings pointer to the top of memory. Then it looks for the location of each currently defined dynamic string, flashing them to the top of memory and rewrites the current values over the skeletons of their previous values.

The result is to free up memory so your program can continue. However to the user the process is indistinguishable from a system crash. The display freezes and the keyboard locks up. This can be embarrassing and frustrating for the programmer and confusing for the hapless user.

If even garbage collections don't make enough room for dynamic strings then the system has no choice but to capitulate with an OUT OF MEMORY ERROR.

Installing alarm bells

● So what to do? Firstly you can institute our yown garbage collects at times that suit you - not just as you finally get the Mother Ship in your gun sights or you are typing a burst of inspiration into the new text processor.

To do this in Commodore Basic you execute FMEMORY=FRE(0). (The (0) is a dummy value). Originally this expression was to give you the number of bytes of free memory. However it's more useful for triggering controlled garbage collections since the value it returns is more accurate for a PET than a C64. The correct free memory value is given by the formula:

```
FM=FRE(0)-(FRE(0)
```

A good point for a prophylactic garbage collect is just after you display an interesting graphics or text screen - hopefully

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the user will be too distracted to notice the computer has gone out to lunch. Of course more, shorter garbage collects are preferable to one interminable one.

Alternatively you can take action just before the operating system calls the cleaners in. The garbage collect routine is activated when the next dynamic string to be added to the bottom of string memory is long enough to hit the top of array memory.

Since Commodore BASIC allows a maximum length of 255 bytes for strings we can be sure that a garbage collect is due jiffies after free memory falls below 256 bytes.

To calculate free memory don't use the FRE function (unless you want to keep triggering lock-ups). The best way is to read the difference between the pointer to the bottom of strings and the top of arrays (see Table 2). The free memory value is thus given by:

```
FM=PEEK(51)+256*PEEK(52)-PEEK
(49)+256*PEEK(50)
```


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The strategy you adopt when the low free memory alarm goes off is up to you. While developing your program you could ensure that all functions after this point are string memory neutral.

If a garbage collect is unavoidable it's important to give some explanation about what's going on, or to mask the lock-up behind a period when the user will expect no response from the keyboard or movement on the screen. Even better would be to clean up string memory so quickly that he or she doesn't notice.

How bad can those Garbos be?

● Well, let's see. Add these lines to your WOLF program above:

```
20DIMSHEEP$(8350)
60BS=PEEK(51)+256*PEEK(52):TA=PEEK
(49)+256*PEEK(50)
70FM=BS-TA:IFFM<214THENPRINT"{CTRL
7}GARBAGECOLLECTION"
```

In line ten this DIMensions an array which simulates the memory taken by a fair sized program, arrays and variables (100 blocks worth). We'll use the sheep in a minute.

Lines 60 and 70 read free memory and signal an imminent garbage collect. The alarm level is cut a little finer here because the length of the last string is known.

So run the program ... Aha there are the garbage dumps he's been going on about ... two of them ... But wait a minute, those collections take no time at all! What's all the fuss about?

Considering there were about 32 kilobytes of garbage to clean up, that was pretty speedy. In fact garbage collection should be called "active string collection." All the system had to do in this case was to reset a pointer and rewrite one string to the top of memory.

Alas this is not the string configuration in most real life programs. Change and add the following lines to simulate a user memory laced with active strings and watch what happens:

```
70FM=BS-TA:IFFM<214THENPRINT"{CTRL
7}GARBAGECOLLECTION("X"SHEEP)"
90SHEEP$(X)="M{A39times}"+""
100PRINT"{CTRL2}"SHEEP$(X)
```

It takes about 58 seconds for the system to herd those bleating SHEEP$ up to greener pastures. And the garbage collections go on and on. It takes six of them before WOLF$ finally reaches 255 bytes

Notice that at each call to the high strings corral there are more SHEEP$ and it takes longer to collect them. The only way to stop them critters is to get out your RUN/STOP RESTORE and blast em. The program takes about 10 minutes 30 seconds to run. More than nine minutes is wasted in garbage collection.

Conclusions

● Dynamic string garbage brings on unnecessarily early and more frequent garbage collects. Meanwhile the duration of the lock-ups is influenced by the total number of active dynamic strings in the system at that time. One other factor that influences the duration of a garbage collect is the amount of memory taken up by program code, arrays and variables. That slows all BASIC functions.

Custom cleaning services

● If the Commodore cleaners take just too long for you then one alternative is to run your own service. You can achieve this quite simply from BASIC. To do this set the bottom of strings pointer back to the top of memory value and then reinitialise the finalised forms of the strings you want to keep. So let's add a Custom Collect routine to the WOLF program. Change and add these lines:

```
70FM=BS-TA:IFFM<256THENPRINT"{CTRL
7}CUSTOM
COLLECTION:GOSUB500:GOTO600
500REMCUSTOMCOLLECTION
510POKE51,0:POKE52,160
520WOLF$=WOLF$+""
530FORS=20TO30:SHEEP$(S)=SHEEP$
(S)+"":NEXT
540RETURN
```

This subroutine can be handy if your program has generated a lot of active strings you don't need any more. It performs all of the chores of a garbage collection but can be only a fraction of the time. Also if you have a set of strings that are defined at initialisation, you can read the bottom of strings pointer after they are first set up. Then, if you want an instant reset, poke the pointer back to those original values.

A better way

● There are limits to the amount of pollution any system can take (don't we know it at Manly!). Pollution control depends on sorting out the good from the bad, and that sorting can eventually take up too much time and energy.

In my next article we're going to apply the Greenpeace solution to pollution: stop it at source. We'll look at how we can expand the power of dynamic strings and cut out the unnecessary costs. ❑

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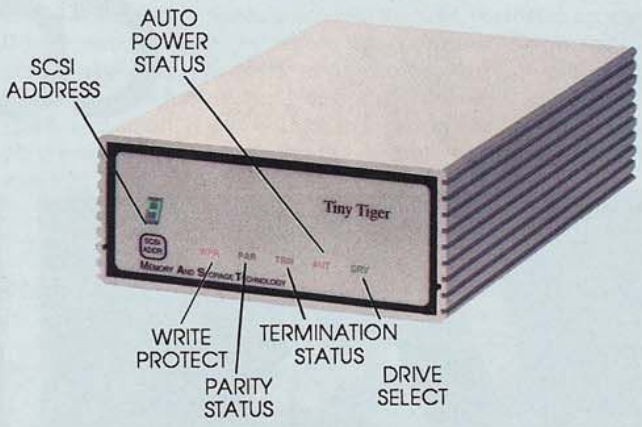

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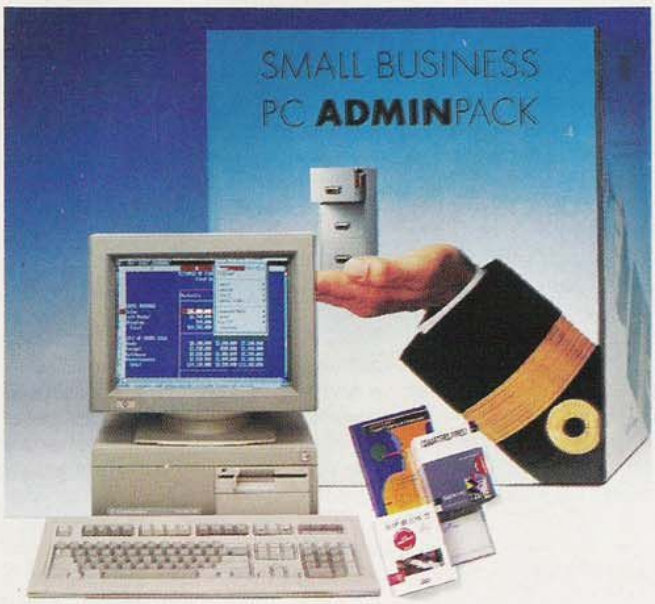

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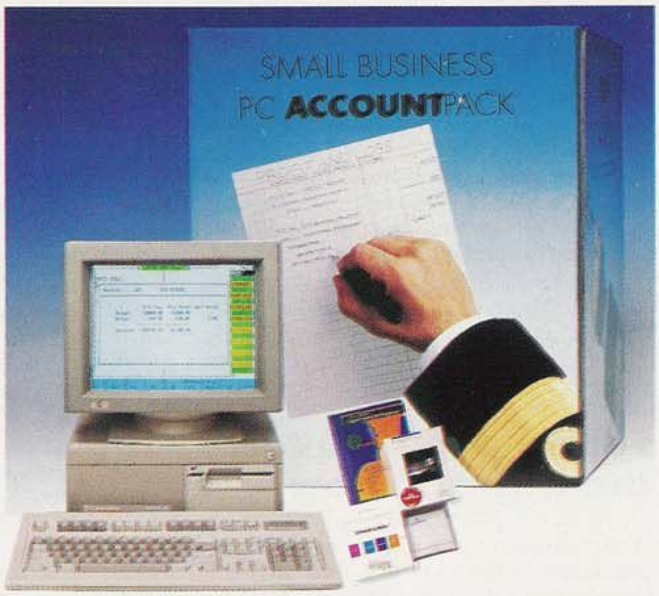

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Coming to grips with the Amiga's CLI

by Andrew Leniart

A tutorial for beginners Part 3

WELCOME TO THE THIRD instalment of our tutorial on the Amigas Command Line Interface.

For those of you that have just discovered this series, you can read Part 1 of this on-going tutorial in the May edition of *Australian Commodore and Amiga Review*. Part two is in July and I suggest that you get a hold of these editions and read up in order to gain the full benefit of what this instalment contains!

This issue we will examine the workings and some of the complexities of the diskdoctor, formatting disks and deleting files and a couple of other things as they come to mind.

Formatting floppies: the why and how

Scenario: Having just purchased an Amiga, you trot down to your local computer store and make the first of many donations to them in order to get some blank disks. You get home, load up your Workbench and slam one of your new disks into a drive to copy some files onto it or whatever.

The disk drive spins, makes a couple of crunching noises and finally a disk icon comes up on the screen with the name "DF1:NDOS" or "DF1:BAD". There may have even been a couple of requesters appear at the top left of your screen with the Amiga complaining that it can't validate the disk, and suggesting that you diskdoctor the disk.

So what's going on? Well, don't panic. You haven't bought the wrong type of disk or anything like that. It's just that the Amiga needs to prepare this disk for itself before it can read or write to it. It does this by way of formatting.

Imagine the blank disk is like a new car park, with fresh bitumen ready for use - but no parking spots marked out - just wide open space. Before the car park is ready to use, white lines must be painted to mark where cars may be parked and direct traffic flow. Let's apply this to the Amiga.

When you first buy a box of 3.5 inch disks, you are getting an empty carpark, or a perfectly blank magnetic media. At this stage the disk is ready to be used by any type of computer, be it an IBM, Atari ST or whatever. In order to organise the disk so the Amiga can deal with it, we need to FORMAT the disk using the CLI, or INITIALISE it via the pull down menu on workbench. This process organises the disk ready to store information in Amiga format.

The difference in disk formats from one computer disk operating system to another is the way the lines in the car park or the format in which information pockets on the disk are arranged.

Once a disk is formatted, you can then use it to write and store data to, copy games onto it and all the good gear like that, without the Amiga complaining that the disk is not to its liking. But how do we do it ?

Formatting a disk in Cli is not as difficult as it might sound. Let's look at the command template:

```
Format DRIVE <disk> NAME<name>
[NOICONS]
```

Now let's analyse the above template: "Format" is obviously the command which you want the Amiga to execute. "DRIVE" tells the Amiga which drive the disk you want processed is going to be in. "NAME" allows you to specify what the disk will be called after the process is finished and "NOICONS" allows you the option of not having the Trashcan Icon being placed on the newly formatted disk.

So to format a disk in drive DF1:, call it "My_Disk" and not bother with having a Trashcan on it, (the Discard item on Workbench does the same thing anyway) we would open up a Cli and type in -)

```
Format Drive df1: Name "My-Disk"
NOICONS
```

and hit Return. If everything went well, the Amiga would then respond with "Insert disk to be initialized in drive DF1: and press return". Then it is a simple matter of following the instructions given on screen.

Formatting is also a good and effective way of creating a blank disk if you have one that's full of stuff you never use anyway. However caution should be used doing this, as once a disk has been formatted, everything on it will be wiped and lost forever, so be sure that this is what you want to happen!

Now the above command template is for the 1.2 version of workbench. The 1.3 upgrade gives you a couple of extra features which I think it is worth spending a few lines on explaining. Here is the command template for the 1.3 Version of Workbench -)

```
Format DRIVE <disk> NAME <name>
[NOICONS] [QUICK] [FFS] [NOFFS]
```

The "Quick" argument speeds up the formatting operation so that it only takes a few seconds to format a disk which has been formatted at least once before. The time saving is considerable as normally the process takes about one to two minutes to complete.

The "FFS" and "NOFFS" arguments work together. These are used when formatting a Hard Drive (or Hard Disk as they are often referred to), Adding the FFS puts the new and faster FastFileSystem into use while the NOFFS causes the slower FileSystem to be used. We will look at these two arguments in more depth another time when we start to get into "Mountlists" and what they are used for etc.

Using the Delete command

Another way of getting rid of unwanted files on a disk is of course the delete command. Strictly speaking, Delete does as the name suggests and removes files from the disk to make space for others. Most people think that once they delete a file it is gone forever, however deleted files still do exist, it's just that DOS is fooled into not seeing them and using the space they occupied.

Unlike with formatting, you can in fact sometimes recover files you may have deleted from a disk with the help of DiskDoctor or other utility programs in the public domain; and I'll explain how to go about that shortly. Firstly though, let's look at how we use Delete...

Type in "Delete ?" in the Cli and you will end up with the following command template using Workbench 1.2 -)

(Continued on page 53)

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So you've had your computer for a while, and you'd like to fiddle around with the music side of things, or music is the reason for your Amiga purchase.

Where do you go for advice on which musical package suits your needs and how to use it?

The most logical place would be where you bought your machine, right? What's that you say, you tried that already only to find not a lot of information forthcoming. Even the best of Amiga dealers do not necessarily know the difference between a stave and a clef.

All that is about to change, the ***Hard Disk Cafe*** has a music man to show us all the way. From entry level and beyond he will advise you on the ins and outs of Amiga and music. The ***Hard Disk Cafe*** will have Music Rob each Wednesday in the shop with all his gadgets. So come along for a chat.

Delete ,,,,,,,, ALL/S, Q=QUIET/S

The (,) commas represent how many file names you can type in to delete on the one command line. It does not matter that everything will not fit on one line as the Amiga will "wordwrap" the command on successive lines and will not execute it until you press return.

The other two are "switches" which can be used with the command. ALL tagged on the end will delete all files in a given directory as well as the directory itself. For example:-

Delete DF0:Demos ALL

would delete everything in the Demos drawer. Note that this switch will fail if something within the directory is currently being used (if for example you have one of the demos running) or if you have assigned something within the directory in the startup-sequence.

The Q or QUIET switch suppresses the output of the progress of the command to the screen. When you delete a number of files, the Amiga will progressively tell you on screen when each file has been deleted. The QUIET switch tells the Amiga you do not wish to be bored by this happening!

The use of Wildcards is ideal with the delete command as you can delete many files with similar names very easily. But first, let's look at what wildcards are and what type of situations could cause us to want to use them.

Wildcards

Just like a Joker card acts in the card game *POKER*, Amiga wildcards perform similar functions for us in the Cli. We have the ability to match numbers and characters by the use of (#) for numbers and (?) for characters. But why would we have many filenames with a similar name to them, and when would we need to match them ?

Well, when programming for instance, it is a good idea to save work to disk often. Most programmers would save at least every second time with a slightly different filename. Why? Because this lessens the chance of losing all their work in the event of a major crash or corrupted disk. This will become a little clearer when we later talk about Diskdoctor.

Anyway, assuming that the programs name is "Cards", then we would save after say 15 minutes to that filename. The next time we save to disk, we might call it Cards1 and later Cards2 and so on. By the time we were finished our Card game program, we might have something like 15 filenames on the disk, each representing one stage further in the program. I actually use this safeguard system when writing long articles, to lessen the chance of losing all the hard work. (You would understand if you saw the speed at which I type)!

To get rid of all these files from the disk, we could "delete" each one individually which takes quite a bit of work, or we could use the WildCard function like so:-

Delete DF1:Cards#?

The above command would delete all files with the name Cards1 right through to Cards15 or whatever. With this example, you can see how much quicker and easier wildcards can make life in the CLI. But wait...

We have just deleted all the files of our program using this great function and we forgot to rename the finished one, so that's gone too! Have we lost all our hard work...?Well, in a way we have, but then again maybe not. We can use the Diskdoctor to help get us out of trouble here.

The Diskdoctor

Simply put, diskdoctor is just another command in the "c" directory of our workbench disk. However this is an excellent and quite powerful command which is capable of repairing a disk which might have been corrupted in some way. ie; If you accidentally eject a disk from a drive while the drive head is operating, it is almost certain that the Amiga will not be able to read that disk again.

What would happen when you put the disk back is that the drive would grunt and groan as it tried to validate the disk, until eventually you would get a requester on the screen which told you that the disk is corrupt. Cancel this requester and all you get is "DF0:NDOS" as the name of the disk on workbench. This results in the disk being unusable because the Amiga can no longer read it.

This is where the DiskDoctor comes in. Here is the command template -)

Diskdoctor DRIVE/A

Now in this case, the "/A" represents an argument. This must be entered when using the command otherwise it would fail. Assuming the dud disk is in the first external drive DF1:, we would enter "Diskdoctor DF1:" and press return.

The good doctor would then commence surgery on our sick disk and do his utmost to rescue our data for us. Now this is where we might be able to get our deleted files back as well. A disk need not be "corrupt" in order to be diskdoctored, so if you accidentally delete something important in the Cli, try the above exercise and you'll have an excellent chance at getting it back at the end of the process.

Errors and other Messages

There are quite a few error messages which diskdoctor throws on screen during surgery and what follows is a brief explanation of the more common ones.

"Diskdoctor cannot run in the background"

Never try to "run" diskdoctor. The good doc is stubborn this way and will refuse to multi-task. He wants your full attention or nothing at all.

"Not Enough Memory"

The cause of this should be obvious. Close all unnecessary windows and stop all other processes that might be operating. Note that this error could also come up if you tried to diskdoctor a device other than that of a diskdrive. (A printer for example).

"Error: Unable to access disk"

You forgot to put the disk in the drive dum dum! Or else the drive has been switched off or something like that.

"Disk must be write enabled"

In order for the good doctor to be able to commence surgery, you must write-enable the disk. (No hole in the write protect area on the disk). This is because the doc performs the surgery in

memory and then places the repaired file back on the same disk he got it from. Think of it like taking a defective heart out of a body, repairing it and then sewing it back. (This is getting gruesome).

"Unable to read disk type - formatting track zero"

The doc can't make out the disk type on track zero of the disk and takes the initiative and reformats that track.

"Track zero failed to format - Sorry!"

His hands are tied! Can't read the type as explained above and the track will not format, the doc can't repair the disk and apologises for his incompetence. (No you can't sue!) There is a good possibility that there is a Hard Error on track zero of the disk or maybe the read/write head on the drive itself is badly positioned if this error occurs frequently with other disks. Get your Amiga to a computer doctor if this is the case.

"Unable to write to root - formatting root track"

The root track on the disk (track 40, side 0) is reformatted and the disk is Installed. Because the name of the disk is contained on this track, diskdoctor assigns the disk name "LAZARUS" to the disk. I'll explain why the name "Lazarus" shortly.

"Root track failed to format - Sorry!"

More apologies from the incompetent fool. Actually, this is a fatal error and the result is that diskdoctor can do nothing to rescue this disk.

"Cannot write root block - Sorry!"

Does he really know what he's doing? The root block of the disk cannot be written and the doc can't do thing one about it!

"Warning: File xxx contains unreadable data"

The file that the doc's referring to (xxx) cannot be "fully" repaired and doesn't contain any readable data. You might be able to recover some of the data yourself with the help of a disk monitor (a program that allows you to dig deep into disks). You are given the option by diskdoctor to remove the file completely by answering YES to the "Delete corrupt files in directory xxx?" prompt.

"Attention: File xxx in directory xx is unreadable and has been deleted"

The doc's decided that he knows best and has taken the initiative and erased a file because too much data was missing to reconstruct it. Just like a typical doctor.

"Hard Error Track xx"

Probably an error with the disk itself or again possible problems with the drive heads. Sometimes, this problem can be caused by the reconstruction of certain files or directories.

"Key xx now unreadable"

The block with the number specified is no longer readable.

"Replacing or Inserting 'dir' or 'file' xx"

The file or directory specified can be fully reconstructed so the doc's telling you that he is putting them back on the disk in their appropriate place.

"Now copy files to a new disk and reformat this disk"

Surgery is complete, the patient's in recovery and the doc is making up the bill! When you see the above message, the disk you had doctored will now be in a readable state again and you can copy all the recovered files onto a new preformatted disk.

It is also suggested that you re-format the doctored disk once you have copied the rescued files from it. This is a good idea, especially if the disk had a few hard errors on it.

Who's Lazarus?

Once a disk is diskdoctored, it is assigned the name "Lazarus". Why? Bit of a joke by the Amigas' programmers is the reason I've heard. Y'see, Lazarus was a dude in the Bible who was reportedly risen from the dead. Diskdoctor assigns the name Lazarus to any disk he works on because he is claiming to bring the disk back from the dead. Something like that anyway...

Installing a disk

Another thing that happens when diskdoctor completes his job is that the disk ends up installed. This means that the disk has been prepared to be made self booting.

Installing a disk is necessary if you wanted to create a self booting disk which would take advantage of its own startup-sequence and act as the system disk as workbench does. The workbench disk is an installed disk. Using this command is simplicity itself.

Install DF1: would install any disk placed in drive df1:. Try this and then warm boot the disk and you will find that the Amiga happily accepts this disk at the "Workbench Hand Prompt" on screen when you first fire it up without a disk in it.

You can now begin to create directories on this disk and by copying the necessary files across, make it into a custom system disk. There is an article coming up which explains all about making self booting disks soon. (Pester the Editor!)

Alternatives to Diskdoctor

There are quite a few alternatives to DiskDoctor which you can virtually get for the price of a disk. The public domain is full of programs which do the same job as diskdoctor (and sometimes even better!) and one that comes to mind is a program called *DiskSalv*.

If you don't know what the public domain is all about then you are missing out on a lot of freely available and sometimes excellently written software for the Amiga. Contact a PD outlet such as Prime Artifax or Megadisc and get them to give you some info.

Better, get a catalogue of all the Public domain disks available and look through to see what there is to see. You will be pleasantly surprised. Either of the above outlets will be more than happy to help you out.

In conclusion...

Well that's about it for this time. Try out the examples given in these tutorials to get the feel of how they work. Go on, it can't hurt and it will help you remember them. It's also a good idea to re-read previous instalments if something is not clear.

I have always maintained that the best way to learn anything is by trial and error along with a little bit of guidance. The beauty of learning computing is that as long as you always use a copy of a disk, what harm can you do by trying different things?

Unless you take a hammer to the keyboard, there is no way you can harm your hardware by experimenting with commands and such. Life is short, be daring!

Till the next time.... ❑

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Commodore 64: The Column

In this month's column, Owen James takes a look at a source of many 8-bit users' frustrations - the humble 1541 disk drive.

EVER FELT THE SUDDEN urge to throw your drive against the nearest wall? Ever felt like attacking it with a screwdriver to see if there really are gremlins inside that enjoy eating your files and otherwise making your life miserable? Don't worry - chances are that you're not alone! Below are a variety of hints, tips, and tricks that should relieve some frustrations and help get the most from your drive.

I remember when I upgraded from a tape drive to a disk drive. The speed increase was incredible. Going one step further, though, and getting a speed-up cartridge - well, I was in 8-bit heaven. For those of you without some kind of speed-enhancing utility, I provide this short and fairly simple command:

```
OPEN15,8,15:PRINT#15,"M-W"CHR$(7)
CHR$(28)CHR$(1)CHR$(15)
```

True, this may not be able to give you the 1000 percent increases that some cartridges can, but it will make the Scratch, Validate, and Rename commands just that little bit faster.

When files are saved to disk they become one of four file-types: USR (User), REL (Relative), SEQ (Sequential), or PRG (Program). BASIC programs are saved in the regular PRG format. This doesn't have to be a restriction, though, because you can save a file in any format. "What's the advantage of this?", I hear you ask. Firstly, it can serve as a simple form of file protection, since a program that is saved in any format other than PRG can't be loaded in the normal way. Secondly, if you save your BASIC program as a sequential file then it can easily be loaded into your favourite word processor to become part of a text document. To save a file as a sequential file, type:

```
SAVE"Filename,S",8
```

Notice the comma and the S extension at the end of the filename. This S tells the computer that the file should be saved as a sequential file. The S can be replaced with other letters, depending upon the type of format it is to be saved as. Loading files are done in almost the same way:

```
LOAD"Filename,S",8
```

(Remember to replace the S with the letter you require if the file is different from a sequential format.)

Here's an easy way to find out what the name of the last file you loaded was. Type SYS 62913 to reveal the secret of the lost or forgotten filename.

One of the more frustrating things is the Save and Replace command. I'm sure that you all know about problems with this command not working (I've even heard about the odd case of it scrambling a disk, or perhaps it was just those vengeful gremlins again!).

I'm afraid I can't tell you some magic command that will solve all the problems, but I can give some advice. The save and replace command works by saving the file to disk first, and then scratching the original. Unfortunately you must have enough room on disk to enable the save to be completed. Check for this before you attempt a save and replace. I've found the command to be more successful by adding a zero after the @ sign (SAVE "@0: Filename", 8). I think the best solution for this problem would be to manually scratch the file and then save it. Believe me - it's worth the extra effort.

A terrific feature of the Amiga disk drives is their ability to detect when a disk is inserted or removed from the drive. What a lot of 64 users don't realise is that this can be done on their drives too. The subroutine listed below will wait until a disk is either inserted or removed from the drive before continuing.

```
10OPEN15,8,15
20PRINT#15,"M-R";CHR$(30);CHR$(0)
30GET#15,A$
40IFASC(A$+CHR$(0))THEN20
50CLOSE15
```

One application that comes to mind is a program that requires the use of a work disk and a system disk. The user might be told to remove the system disk and insert a work disk. The above routine would need to be called twice - once to sense the disk's removal, and again to sense the presence of the new disk. With this routine you may never see a "Hit key to Continue" prompt again!

Working with a lot of files from within a program can be very messy and you can easily find yourself in a tangled web of files and channels. If you wish to close all open files then try SYS 65511. This system call can even be used from within a program (use it to ensure all files and channels are closed after selecting the quit option from your menu).

It would sometimes be useful to check if a disk has a write protect tab over it from within a program. The following short routine can be incorporated as part of a program to check if a disk is writable before trying to save anything:

```
10OPEN15,8,15:PRINT#15,"M-R";CHR$
(30);CHR$(0):GET#15,A$:CLOSE15
20IFASC(A$+CHR$(1))=1THENPRINT"DISK
ISPROTECTED":END
30PRINT"DISKISNOTWRITEPROTECTED"
```

Tips Section:

At the time of writing, the response has been slow to my request for reader input. Write to me with your tips, tricks, user group details, questions, and just about anything else on the subject of the Commodore 64.

● If you find that you've typed NEW before you should have, or want to get back your program after resetting the 64 then type:

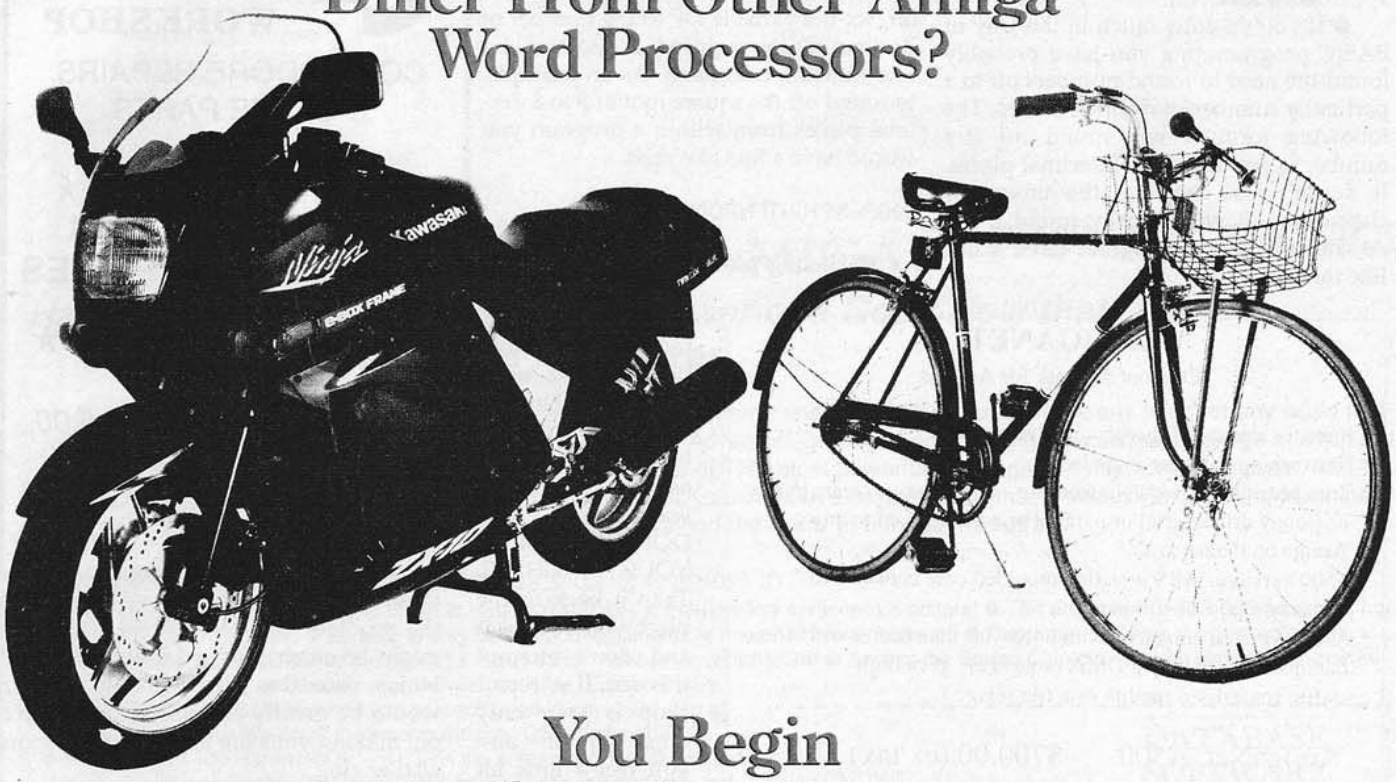
```
POKE2050,8
SYS42291
```

● Keeping your BASIC program from prying eyes can be a real problem. Here's a tip to make BASIC lines disappear from the listing:

1. At the end of any program line, place a colon, a REM, and two quotation marks ("").
2. Cursor back one position so that the cursor is flashing over the second quote mark.
3. Press and hold the SHIFT key while tapping the DELETE key once for every character in the line that you want to disappear
4. Now release the SHIFT key and type the DELETE key until you reach the newly positioned quote mark.

Continued on page 60

How Does New ProWrite 3.0 Differ From Other Amiga Word Processors?



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- Tabs with left, center, right, or decimal alignment
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5. Hit RETURN

If you now type LIST you should find that part or all of that line will have disappeared. Clever, eh?

● If you've done much in the way of BASIC programming you have probably found the need to round numbers off to a particular number of decimal places. The following formula will round off any number to any number of decimal places. It doesn't just chop off the unwanted characters - it will actually round it off. At the start of the program have a line like this:

```
10DEFFNRD(X)=INT(X*10^DP+0.5)/10^DP
```

When you want to round a number off, set the variable DP to the number of decimal places required. It uses the define function command. As an example, to round off the square root of 8 to 3 decimal places from within a program you would have a line like this:

```
80DP=3:PRINTFNRD(SQR(8))
```

● Having problems with your drive or keyboard can be a common occurrence, but a solution might be easier than you think. If these problems happen while the 64 is still under warranty then DON'T OPEN YOUR MACHINE. Take it back to the place you bought it and don't attempt this fix. If a repair shop is your only other option and you feel a little bit adventurous than try this:

Unplug the computer and carefully unscrew the screws in the bottom of the 64 (no matter how hard they try to escape, don't lose these screws!). Have a look at the array of chips on the main board. If you look carefully you should find two chips placed next to each other that have CIA (or the numbers 6526) written on them. These CIA (Complex Interface Adaptor) chips are the possible cause of the problem. They are, in fact, identical chips - only that one controls the keyboard, and the other controls the user port and disk drive functions. If these chips are swapped over then often the problem will be rectified. The CIAs might be either plugged into a socket, in which case the job of changing them would be greatly simplified, or soldered on, making your life just that much more challenging.

If in the slightest bit of doubt about what you are doing then don't touch the internal electronics because you might end up in a worse position than what you started in. The 64 houses some very delicate components - BE CAREFUL!

Remember, I want to hear from YOU. This column is here for the benefit of all 64ers so get writing. Send correspondence to myself, Owen James, at the *ACAR*, P.O Box 288, Gladesville, 2111. ❑

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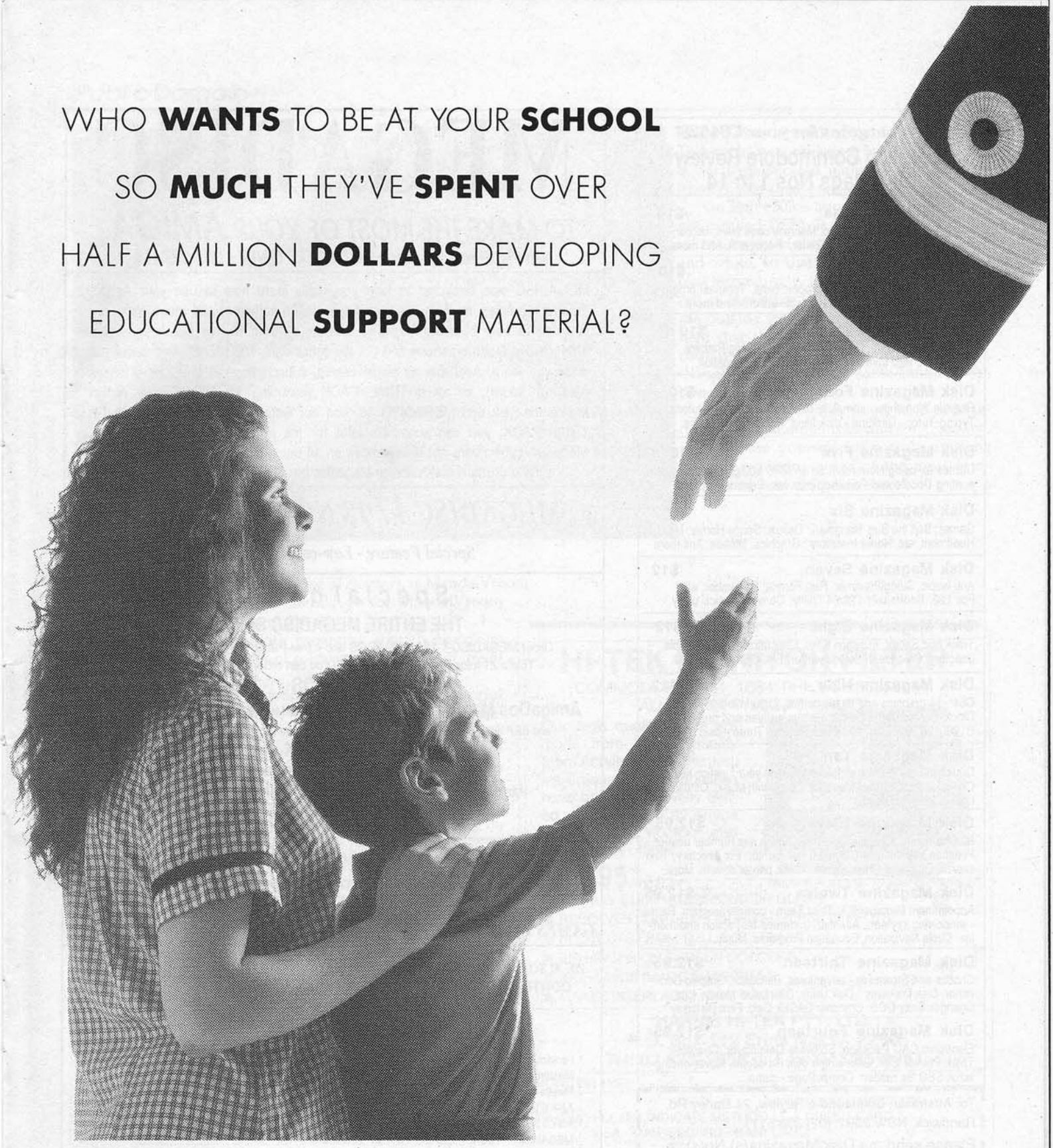

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The Mega Entertainment Section

Edited by Phil Campbell

That's Entertainment

All the latest news and views from the world of entertainment ...

AMOS arrives at last

● The long awaited *Amos* game programming language for the Amiga has arrived at last - and it's very impressive. Pactronics have already launched an Amos Users Club, which provides free Hot-Line support, a regular newletter and access to a growing library of public domain *Amos* applications. Pactronics also intend to distribute top class *Amos* games both here and overseas - so if you've got a brilliant game idea, here's your chance to put it into action. For further information contact Neil Miller, Amos Users Club, PO Box 253 Rydalmere, NSW 2116. We'll be supporting *Amos* here at ACAR too - if you've written a real blockbuster in *Amos*, send it in. We might even review it . . . and who knows? Tomorrow you might be swimming in champagne.

Another pirate walks the plank

● The Australian Federal Police recently arrested and charged a man from Lake Heights, NSW, on 21 counts of "Advertising for sale items infringing copyright." Guess why? Yep, he was copying Amiga games and selling them through the classified ads.

The man - whose name we won't publish, lucky for him - was fined a total of $1,100, and an order was made for the destruction of all material that infringed copyright.

Questor's Tim Allison has been working closely with the Police in tracking down software pirates, so watch out... hey, pirate, who's that knocking at your door?

New C-64 Games from UK

● Digital Dynamite have just released a 4 game pack for the C-64. The games included are *Strategos, Citadel Of Corruption, Castle Boy* and *Starburst* - something for everyone, from strategy to shoot-em-ups. The games are guaranteed to be very addictive and very playable. If you want to take the risk, they're available by mail order only from Digital Dynamite, Department ACR, 54 Watermill Rd, Fraserburgh, Grampian, AB4 5RJ, Great Britain. Enclose a cheque for 13 pounds. The company are also looking for more top class C-64 games - if you'd like them to add yours to their catalogue, send a copy to the same address.

International 3-D Tennis from Mindscape

● Mindscape have just released the C-64 version of *International 3-D Tennis* - the Amiga version is not far behind. Featuring full 3-D views of the court and fast paced tennis action, the game is sure to be a winner. C-64 disk $39.95, cassette $29.95.

Mindscape CD Compilation finally released

● After a last minute bug fix, Mindscape have finally released the CD COMPILATION for the C64 - there are 30 quick loading games on a standard audio CD. All you need to do is plug a special gadget from your CD-player to your C-64 and off you go! A great innovation, with a retail price of only $59.95. If you bought all the games individually, you'd be paying over $600.

Mindscape birthday celebrations

● A couple of weeks ago Mindscape celebrated their first Australian Birthday at Darling Harbour's Pump House restaurant. The party theme was *Days of Thunder*, based on the new Tom Cruise and Nicole Kidman movie. All your favourite dealers and journos were invited - sadly, I couldn't make it. By the way, Mindscape claim they are now the "fastest growing software company in Australia."

Competition

Mindscape Draw a Gremlin Competition

● It's Gremlin month at Mindscape, and there's a huge competition for Amiga freaks. Just draw a little Gremlin, stick it in an envelope and send it to Phil Campbell, PO Box 23, Maclean NSW 2463 by August the 20th, and you could win one of three Gremlin Game Packs consisting of *Super Cars, Greg Norman Golf* and *Skidz*! Thats right - a copy of each of the top three Gremlin Games. Get sketching, folks, and get those entries in the mail now!

And the winners are ...

● Lots and lots of entries for the Mindscape GREG NORMAN ULTIMATE GOLF COMPETITION! My score for 18 holes was 98, just 26 over par ... I warned you that my golf was pretty bad. Mind you, not as bad as Sean Gibson suggested with his guess of 146. Shame on you, Sean!

Two readers guessed my exact score - Jason Pearson, of Streaky Bay SA, and Sue Hoile of Clontarf, Qld. Congratulations to you both, and keep an eye out in the mail for a copy of *Ultimate Golf* for your Amigas. Next closest answer came from V Wain of Bundaberg, Qld, who guessed 99 strokes. Not bad - so a C-64 version is on the way. Well done, and thanks to all those who entered.

Letters to the editor

THE MAIL BAG is bulging again this month, and we're happy to see it. There's only one problem. Readers are still sending mail to the wrong places. PLEASE TAKE NOTE. Letters for the ENTERTAINMENT SECTION, Hints and Tips and High Scores should be sent to Phil Campbell, PO BOX 23, MACLEAN, NSW 2463. You can also FAX your letters on 066-452060. Letters about anything else should be sent to the main office at 21 Darley Rd Randwick NSW 2031.

Dear Phil

● Thanks for a terrific entertainment section. I agree with some other readers about the use of some more colour screen shots. Also, a ratings system would be well appreciated.

In the *Commodore Annual* you published the password sequence for *Monty on the Run*. Forget it! All you have to do to make little Monty Mole indestructible is to type in "I want to cheat" when requested to type in your name.

On another note, when enquiring about the availability of *Dragon's Lair* at my local Commodore dealer, I was told that they wouldn't be getting any more copies in because "it was simply too easy to complete, and was too old anyway!" Do you think this was a fair statement as I am considering purchasing it elsewhere instead.

Glen Murphy.
Whittington, Vic.

Ed: Thanks for the compliments, Glen. You may have noticed that we're increasing our colour screen shots, and we've introduced a rating system. I would tend to agree with the guy who wasn't going to stock *Dragon's Lair* any more - I'd advise you to go for the sequel, *Dragon's Lair II - Escape from Singes Castle*. The graphics and sound effects are equally good, and there are some great new features like a "SAVE GAME" option as well.

Dear Phil

● Lately I have some trouble with some games and I was wondering whether you could help me out with either some hints, tips, cheats or maps for the following games: *Chase H.Q.*, *Ghostbusters 2* and *Powerdrift*. Any help would be much appreciated. I have also enclosed some maps and tips for Alastair and Michael for *Batman - The Caped Crusader*, some more tips and cheats and a couple of Highscores.

Matthew Mantle,
Gladstone, Qld.

Ed: Looks like a great little machine. There's a great tip for *Chase HQ* in last month's edition, so have a look there. As for the others, maybe some readers can help. Your High Scores are in - congratulations.

Dear Phil

● I read your mag and it's great but I have a problem on *Fung Fu Master*. I cannot get past the two wizards or Master on the fourth floor. Could you please help me?

John Hornbuckle,
Narrandera, NSW.

Ed: Are you sure you didn't mean *Kung Fu Master*? Anyway, keep watching these pages and I'm sure someone will send in some advice.

Dear Phil

● Greetings. Having just read my monthly fix of *ACAR* (from the back on as usual!) I thought I'd better write to you with a competition entry and some high scores.

But first, I've got some advice for other readers. In answer to M. Summers (*ACAR* June) who asked for the secret entry code for *Sentinel*, the code isn't really that secret. Either hit "0" (zero) or just hit return. You'll be given a code for the level you've just reached for future use. I'll dig out a few and send them in soon.

If Glen Robinson is still having trouble finding SYS codes to restart games, try looking at the "game over" or "high score" routines - these usually link back to the start of a program, or at least give a clue on where to hunt.

Stuart Elflett
Toogoolawah, Qld.

Ed: Thanks for the constant barrage of mail, Stuart. Unfortunately, we can't give you a prize in the "guess the golf score" competition - the answer "one more than the score just before the ball was hit into the 18th hole" is technically correct, but not quite as clever as guessing the right answer!

Dear Phil

● Just a brief note to say how much I enjoy your section of *ACAR*. It's good to read an in depth review of a game before I part with hard earned cash. *ACAR* is a great magazine at a great price. Keep up the good work - it's better than any overseas magazine I've read. My husband and I (I sound like the Queen) used to have a lot of fun on the C-64 with a game called *River Raid*. Is there anything like this on the Amiga?

Sally Pollock
Balmain NSW

Ed: Thanks for your letter Sally, and for your husband's, too. Tell him that *Pro Tennis Tour* is a great Amiga tennis game; and there's a new one from Pactronics, *Tennis Cup*, which we haven't review yet. As for a *River Raid* equivalent, I'm not so sure. Perhaps a reader can let us know. ❑

C64 hints and tips

Myth

● Neil Sanders of Hurstbridge Victoria says that simply loading "M2" starts you at *Viking Legends* with unlimited lives - or you can load the game normally, then press the FIRE button on your joystick in part 1 to skip levels. Neil goes on to say "Thanks for a very informative magazine." Our pleasure, and thanks for your very informative hint!

Supercycle

● Stuart Elflett of Toogoolawah, Qld, says you can tell in advance which way the next corner is going to go by watching the white lines in the middle of the road - also, if you're following another bike as the corner comes up you can tell how tight the corner is by the amount the bike ahead slows down. And remember, don't be afraid to use your brakes!

Batman the Caped Crusader

● Matthew Mantle, who sent a detailed list of instructions for the Penguin section of *Batman* last month, has followed up with a complete set of instructions with maps for The Joker section. If you'd like a copy, send me a stamped self-addressed envelope.

Monty on the Run

● Yes, another one! Jason Oakley says you don't need any fancy pokes. Just try this:- Play until you get enough points to make it onto the high score table. Enter your name as I WANT TO CHEAT. The computer will respond by changing the name to YESSUM, BOSS, and the screen colour will change. Now re-start the game. You'll find a little white object in some water on the second screen - walk over this to disable sprite collisions. Jason finishes with the following tips - "You'll also need the freedom kit, numbers

2,4,12,12 and 14. Use left, right and Down on the title screen. Also, watch out for the first lift."

New Zealand Story

● Hold down CTRL and the LEFT ARROW KEY to advance a level, though you'll still need to fight off the end of level monster, says Steven Begley.

Indiana Jones and The Last Crusade

● Also from Steven, who sent a pile of tips this month, comes the news that if you hold down the letters FISH, then keys 1 to 5 will warp you to different zones on the current level, and 6 will step you to the next level.

Dragon Ninja

● Steven says you should POKE 32890,173:SYS 320768 after loading and resetting. He doesn't say what it will do, but it's probably worth a try!

Blasteroids

● Finally from Steven Begley, load and reset as usual, then POKE 11571, 173:SYS 25856 to gain unlimited ships.

Apollo 18

● Regular contributor Troy Morrison gives the following advice for the moon landing stage. Turning your joystick around will make things much easier - now if you want to go left just move left!

Gunship

● Also from Troy, flying under 1000 ft will stop you being picked up by enemy SAM radar, and will also give you a better look at ground targets.

Amiga hints and tips

Rick Dangerous

● Tim Breckell of Erskine Park NSW has supplied a very handy tip for one of my favourite games. After you complete a level, entering POOKY on the high score table allows you to pick the level you start on next time. Mind you, it's only handy if you can complete a level first - which I can't.

Xybots

● Matthew Mantle says you should type ALF on the high score table for infinite energy.

Beach Volley

● Also from Matthew, type in DADDY BRACEY while playing, and then press F1 to skip the level.

Batman - The Movie

● Again from serious Bat-freak Matthew Mantle, type JAM on the title screen keeping each key pressed for a few seconds before going on to the next one, then keep pressing M until the screen turns upside down. Now start the game, and press F-10 each time you want to advance a level.

Hall of Fame

Amiga

Arkanoid - 976,548 Kamikaze Andy
Blockout - 36,455 David Marsh
BombJack - 354, 860 Anthony Stensrud Level 12
Bubble Bobble - 1,200,460 Vanessa Van Der Heyden
Buggy Boy - 103,350 David Thompson
Chase HQ - 4,285,000 Matthew Mantle
Continental Circus - 290,000 Phil Campbell
Crazy Cars - 84,006,720 Bill Horsley
Crystal Hammer - 43,847 David Thompson
Denaris - 53,900 Peter Evans
Dragon Ninja - 204,880 Matthew Mantle
Double Dragon - 124,630 James Knight
Gee Bee Air Rally - 307,466 Kamikaze Andy
Hybris - 1,940,825 / end of stage 3 Anthony Stensrud
Impossible Mission - 66,380 Diane Unwin
Indiana Jones L.C. - Completed Phillip Nicol
ISS - 1,420,450 Å G Smyth
Karate Kid II - 52,000 Robert Dunn
Leatherneck - 83,300 Owen Webster
Major Motion - 50,658 Owen Webster
Menace - 996,481 Kamikaze Andy
Mindwalker - 306,214 P Schumacher
Mousetrap - 64,817 Matthew Mantle
Operation Wolf - 344,800 John Boyle
Outrun - 8,710,989 Daniel Harrison
Offshore Warrior - 626,345 Jacob Booth
Pacmania - 879,480 David Thompson
Pioneer Plague - 35,412 Keir Sooby
Populous - 201,600 Nathan Allen
POW - 612,865 David Thompson
Rampage - 111,600 Kamikaze Andy
Sidewinder - 4,697,000 / stage 8 Anthony Stensrud
Silkworm (heli) - 913,700 A J Dunstall
Silkworm (jeep) - 474,800 Tristan Mason
Skweek - 715,940 Stephen Lander (steve Lee) Level 55
Speedball - 11,945 Simon Ferraro
Starwars - 5,722,822 Christopher Mingos Wave 33
Strider - 10,000 Nathan Allen
Super Hang-on - 7,743,039 Jason Burstow
Sword Of Sodan - 364,750 Kamikaze Andy
Test Drive - 103,981 Daniel Harrison
Test Drive II - 295,794 Justin Sims
Tetrix - Level 103 Sally Pollock
Turbo Outrun - 100,260,819 Matthew Mantle
Typhoon - 54,255 Owen Webster
Whirligig - 28,210 Nathan Allen
Xenon II - 917,420 Mark Porta
Zoom - 58,903 Sally Pollock

Commodore 64

Batman The Movie - 330,920 Simon Watford
Bangkok Knights - 36,800 Nick Van Heeswyk
Bomb Jack - 344,560 J Jacobs
Bubble Bobble - 1,009,857 Kishore Ludbey
Buggy Boy - 118,750 Paul Millward
Chase HQ - 9,220,121 (completed) Iceman
Double Dragon - 17,340 Paul Millward
Double Dragon II - 255,190 Nick Van Heeswyk
Fast Break - 136 To 9 Chris Byrne
Giana Sisters - 69816 Nick Van Heeswyk
Gryzor - 203,900 Paul Millward
Handball Maradona - Level M Nick Van Heeswyk
Hawkeye - 59,000 Nick Van Heeswyk
Ikari Warriors - 267,800 Completed Iceman
Int. Karate - 139,300 Paul Millward
Last Ninja II - Completed 34.2 Sec Nick Van Heeswyk
Operation Wolf - 168,789 Kishore Ludbey
Outrun - 6,438,787 Kishore Ludbey
Paperboy - 19,750 Royston Diaz
Que-Dex - 639 Chris Byrne
R-Type - 684,200 Nick Van Heeswyk
Robocop - 82,250 Tim Lockwood
Rolling Thunder - 222,740 Iceman
Salamander - 235,300 Paul Millward
Street Fighter - 127,050 Chris Byrne (clocked)
Super Cycle - 212,210 Iceman
Test Drive - 24,790 Jason "maverick" Denham
Thunderblade - 1,734,040 Troy Morrison
Thundercats - 57,500 Chris Byrne
Target Renegade - 330,450 Chris Byrne (clocked)
The Untouchables - 70,230 Simon Watford
Wonder Boy - 237,650 Kishore Ludbey

Computer Spot Top 20 selling programs

Commodore 64

1. Pro Tennis
2. World Cup Compilation
3. Chase HQ
4. Ghouls & Ghosts
5. Fun School Education
6. F14 Tomcat
7. Fighter Bomber
8. Arcade Champions
9. Kwick Write
10. Untouchables
11. Project Stealth Fighter
12. World Cup Soccer
13. F16 Combat Pilot
14. Wonderboy in Monsterland
15. Mindstretchers
16. Rainbow Islands
17. Knights of Legend
18. Swiftcalc
19. X Men
20. Sim City

Amiga

1. Kick off 2
2. Teenage Ninja Mutant Turtles
3. Midwinter
4. F28 Retaliator
5. Pro Tennis
6. Kill-Da-Virus
7. Shadow of the Beast
8. Leisure Suit Larry 3
9. AMOS
10. Fighter Bomber
11. Player Manager
12. Champions (Compilation)
13. Dragons Lair 2
14. Champions of Krynn
15. Pirates
16. Hero's Quest
17. Chase HQ
18. Wonderboy in Monsterland
19. Fun School Education
20. World Cup Compilation

VORTEX

Battle at the Edge of the Universe

by Juris Graney

Ever wondered how it feels to be put through the spin cycle on a washing machine? ***Ken Simpson*** *finds out as he plays* ***Vortex.***

EVERY NOW AND again a game comes along that is just so simple and so clever it becomes an instant classic. The original *Space Invaders* was one such game, followed not enormously later by *Asteroids*. Lately, the game that has taken these honours is *Tetris*. All of these games have one thing in common - challenge in simplicity. While I am not in the game of predicting the future it appears to me that *Vortex* is one of these games. The idea is brilliantly simple, yet the gameplay is addictive and challenging. If you get the idea I like this game, you are right.

The picture is that an alien force (the Vortex) has entered our universe and is growing by sucking in matter. Your job is, predictably, to stop this. This is one game, though, where you do not beat the alien by shooting it enough. You beat it by starving it to death. (I haven't quite figured out whether that is any more morally acceptable but it sure is less violent!) The alien is "The Vortex" and to quote from the game manual:"The Vortex is the most visible feature in the game: a large chaotic, spinning mass of stars and dust particles in the centre of the field."

Since it feeds on matter that it sucks in, you have to destroy the matter before it gets it, while not getting sucked in yourself. You do this, not with blasters, but by bashing them against an encircling force wall. Of course, you can be bashed against this force wall too, with equally unsavoury results.

To add to all this are enemies and allies. Enemies are clusters of particles that follow you around and try to knock you into the wall. There are many different types of enemies with different attributes. Of course, your best defence is attack, and there is great satisfaction in seeing one break into a dozen or so smaller enemies which are much less potent and easier to deal with. Since they chase you, it is helpful to have a trick or two up your sleeve.

As any good submarine commander knows, the best way to defeat an enemy is to decoy and attack them. This you can do with dummy images of yourself that you drop by pressing the right mouse button.

Allies are never actually in view as far as I have seen. They drop little parcels in to you that give you extra shielding and more energy. These are very helpful and not to be missed.

Another reason I think this game has more challenge is that you can start from a number of different levels. The startup screen gives you a pointer with six large 3-D buttons. From the start you can access any of the lower three. This gives excellent variety from the start.

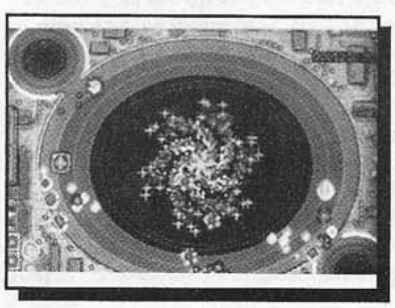
Also available are four modes of play. You can play as a single player, two players (where the contest is between the two players), Team Mode (where you team up to beat the Vortex together), and War Mode where you pit yourself against the other human player directly as well as the Vortex. So far I have only played one player mode, but I am looking forward to a quick little war!

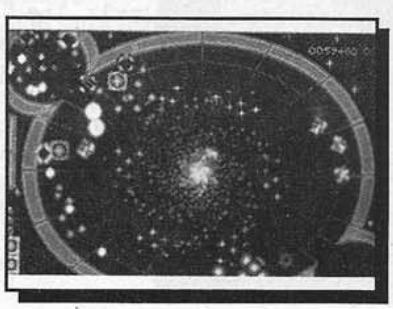
Control over the game is by the mouse, which is easily the best way for this sort of game. To have the immediate accurate control over speed and direction is very important. The catches are - that your ship has mass and velocity, so it behaves as such and cannot stop on a five cent piece. This adds to the difficulty and 'realism' of the game.

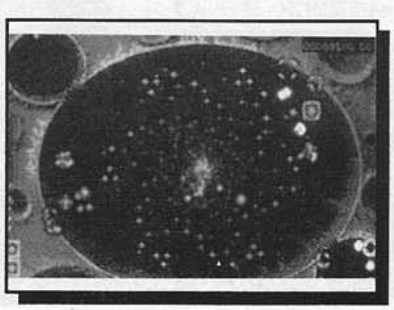
You can also pause the game and quit at any time. I don't know if it is just one of my obsessions, but why do software houses insist on long and involved games not having save game options! It means you must either spend hours and hours at the computer, or resign yourself to never getting anywhere.

This is, however, a minor quibble. Overall the game is great. Sound effects and music are tastefully done and the graphics are excellent. If you, like me, are getting a little tired of the continuous line of look-alike punch-em-ups and shoot-em-ups that are being paraded to us, then *Vortex* may be just what you are looking for.

Review copy from **Pactronics.**
(02) 748 4700
RRP Amiga $39.95 ❑







Super Cars

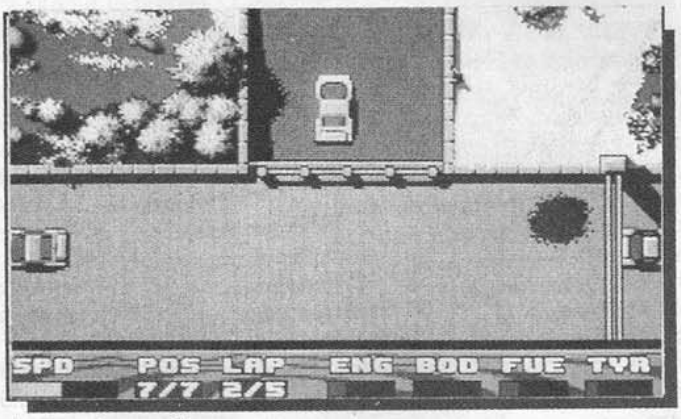
Move over, Super Sprint.There's another contender for fastest rev-'em'up on the block. Juris Graney reports ...

WHEN IT COMES to car games, *Super Cars* is on the top of my list. It's kind of like a cross between *Test Drive* and *Fifth Gear* and that old favourite *Super Sprint*. There are 27 stages of highway horror to battle through in a variety of super fast cars. Sounds pretty good,huh? Well, wait till you play it.

About thirty seconds after the disk slips into your drive, you're faced with two kids leaning against a sign. Now go and have a cuppa. By the time you get back you'll find two news readers reading out the top scores and best times for each of the nine tracks. This is neat - the most original high score table I've ever seen.

A couple of button presses and you'll find yourself admiring three beautiful cars outside a car sale yard. You have three options. You can go into the Sales Office and try and squeeze a car out of the stingy car dealer. You can go to the garage where you can buy optional extras such as Anti Skid, Power Steering, Front and Rear missiles (which are handy for removing some of the other drivers), and Side Armour. Or you can go racing.

You have nine tracks to complete, and some are very tricky. Pick a track and wait while it loads - you'll be faced with an overhead view of yourself and the other cars. On the bottom right hand side of the screen there is a bar-graph showing the state of various parts of the car. There's one for the body that drops when you run into walls, there's one for the engine when you go too fast and stop suddenly. There's another for the tyres, which wear out when you skid, and last but not least there's the fuel guage.



There are plenty of hazards on the track, and obviously you should avoid them. Make sure you steer clear of the water, sand and oil traps. Driving into them has unpredictable results.

Driving controls are fairly simple once you get the hang of the game. Keep your finger on the fire button to accelerate. Taking your finger off will stop the car in its tracks. The first and second levels are basically easy, though the drivers aren't very friendly. They will forcibly drive you into the walls or into other cars.

If your car runs into the wall too often the race will stop.

A scoreboard displays both your top speed and your average speed for the course, as well as your race position and any earnings. Prize money can then be spent back at the car yard to option up your vehicle, or trade-in for something a little more up-market.

Super Cars will take you a long time to complete - I'm still trying to get myself a new car. The music is excellent, and the graphics are packed with little details, like spectators standing around the track - they even cast realistic shadows.

The boys at Gremlin need a pat on the back for this game - it is a game for everyone.

Review copy from **Mindscape.** (02) 899 2277

RRP Amiga $54.95.

Emlyn Hughes International Soccer

by Phil Campbell

Anyone for soccer? Yes, I know you've just spent the last four weeks camped in front of the telly watching the World Cup. And I know you're not feeling too good. Bleary eyes, cramped neck, overweight from all those midnight snacks - telltale signs of football fever ...

Medical authorities warn that sufferers should be brought back to the real world gently. Immediate withdrawal can have harmful side-effects.

Reality-shock syndrome can leave you feeling really quite ill, said one expert. It's best to gradually re-activate the central nervous system while maintaining a constant dose of soccer-oriented visual input.

Emlyn Hughes International Soccer is designed with this very purpose in mind. Playing the game on a standard Amiga computer has an extremely beneficial effect - the television quality graphics are almost indistinguishable from the real thing, and the carefully designed control system has been shown to encourage gradual wrist movement in even the most serious cases.

Seriously though, folks, if it's a top-flight soccer simulation you are looking for, this would have to be the one. Soccer-sims are by far the most popular computer games on the British market, and there is considerable pressure to produce bigger and better titles with bigger and better features. So far on the Amiga at least *Emlyn Hughes International Soccer* is the biggest and best.

Some punters are mad-keen on games that emphasise team management and overall strategies. They will quite happily fiddle for hours on end with games that ask them to decide whether Smith and Robinson should replace Pearson and Alderson on the English team, or whether Carter is a better wet-weather striker than Innes or Green.

Once you've designed the perfect team, your computer simulates a game, or even a full season. If you are particularly lucky, you may even be able to watch the action on screen. Not control it just watch it. High-powered stuff, but not my cup of tea.

Less cerebral players prefer a bit of action in their soccer sims, and naturally enough, there are plenty of titles designed to keep them happy. Thrust your man around the field with your joystick, kick and tackle to your heart's content - not a mental challenge by any means, but very accessible to the average meat-head like myself.

Emlyn Hughes International Soccer provides the best of both worlds. The opening screen features a number of pull-down-menus that let you configure your team to your exact specifications. Before the game begins you must choose a 16-man squad. Each player has three skill factors - running speed, defensive skills and attacking skills.

At the start of the game all players are fully fit, but during play their fitness declines steadily due to fatigue. Heavy tackles and bad falls can have a dramatic effect, and if a player falls below 75 per cent fitness, he may need to be replaced with a substitute. You're the coach - it's up to you.

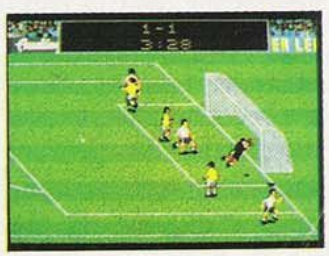
As for the game itself, it's action all the way. Your joystick controls the player nearest the ball - push it and he runs, pull back and he'll stop. Press the button to tackle an opponent when you are playing defence, and to kick the ball when you have possession.

The graphics are nice, with a lush green pitch, restless crowds and agile, well-animated players. Sound effects are top class: the crowd cheers, chants and murmurs very convincingly, thanks to a well-mixed digitised sound track.

A top-class game, and good therapy as well.

Review copy from **Pactronics** (02) 748 4700.

RRP Amiga $49.95 ❑



GHOSTS 'N GOBLINS

Arcade ace Steven Pike checks out this conversion of an old favourite, and finds that it's going to save him a pile of cash ..

REMEMBER SPENDING a whole day down at the arcade, filling up the *Ghosts 'n Goblins* game with coins until it almost burst, only to go home tense and frustrated? Well, now your bank manager can breathe a sigh of relief, but your cat will have to be careful, because this classic is now available for the Amiga computer. It would have to be one of the best conversions seen for a long time, and yes it can be just as frustrating.

The Demonic Overlord (let's call him Bert) has stolen "Vienna", the beautiful maiden. She just happens to be your girl, and so you don your suit of armour to rescue your loved one. With all the danger that lay ahead, one would have to wonder whether she is really worth the trouble. But you don't know this, so on you go!

Of course, Bert's hideout is not easy to get to. The nomadic zombies that wander the grounds keep you on your toes, but some of those you kill will leave something that could be of use to you. You will also have to watch out for the venus-fly-traps that spit deadly blue olives (I kid you not!). Then there's the flying devil, the hooded "things", and the giant bulldog in a suit of armour. Hey, wait a minute, that's just the first stage, there are another five stages to go!.

The whole scenario starts in the jungle, goes through the town, underground, and up the floors of the castle to the demonic Overlord himself. I haven't gone close to seeing him yet (I couldn't even describe the castle to you).To prevent it being too simple, you are racing against the clock, so there's no time to look at the pretty trees.

For those who are familiar with *Ghosts 'n Goblins*, all I would need to say is that it looks the same as the arcade game, only it's on a smaller screen. For those with a sheltered childhood, the graphics are so good that everything is easily identified - especially the blue olives (which, incidentally, are the stuffed variety).

You start off in your suit of armour, and if you get shot, or are even nudged by anything remotely wicked, you are left standing in your loin cloth. Needless to say, this provides little protection, and any accident now will leave you in a pile of bones.

As you would expect, the zombies are a pale blue colour around the face, and you don't need to be a doctor to know that's not a sign of life. They are very easy to eliminate. The red devil further on, however, is not a pushover. I was on the verge of eating the disk, and giving the computer a bath, when I realised that if you could prevent him from flying, he was as good as dead. On the other hand, once he gets in the air, you're as good as dead.

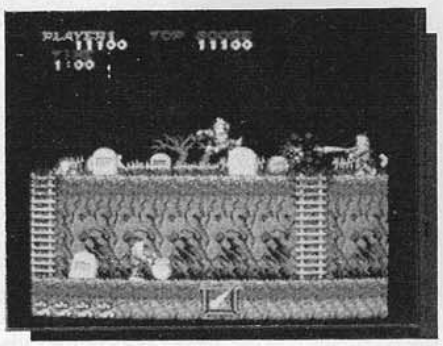
When you have killed him, prepare for the challenge of the bulldog. Be patient with him, it will take a few sets of shots to knock him down. Kill him and you are on the second screen. Easy, huh? One word of warning - there are two bulldogs at the end of stage two!

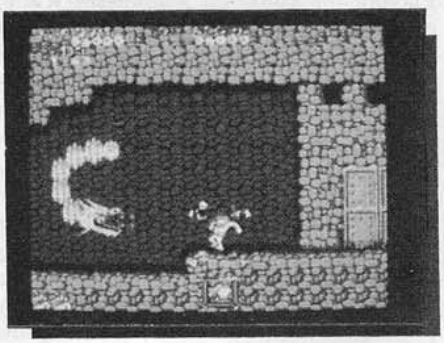
The game provides bright colours and good sound. The zombies go splat and leave a blob of plasma embedded on your retina - it's all good stuff. The fly-traps, devils, bulldogs, bats and the hooded "things" all explode (or is that implode?) in a ball of flames.

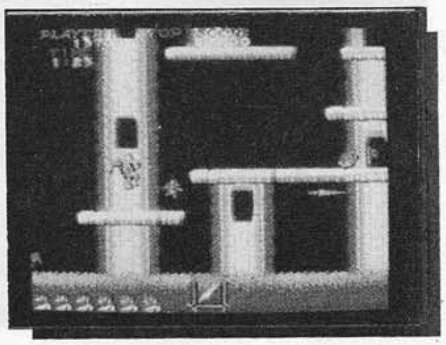
The best wrap I could give this game is to say it is the "authentic home computer version of the classic coin-operated arcade game". It carries the same effects and graphics as the arcade game, and is just as much fun to play. For added excitement, try shooting for long periods at the headstones. Being an experienced player now, I can give you a big tip - persevere. If you are having difficulty at a certain part, try something different. You will soon hit upon a winning combination.

This game is a must for everyone's collection. Who hasn't dreamed of slaying the evil demon to rescue his girl? By the way, it's also great entertainment!

Review copy from **Questor** (02) 662 7944.
RRP $49.95 **Amiga** 500, 2000 only. ❑







Teenage Mutant Ninja Turtles

by Phil Campbell

COWABUNGA! Everywhere I look there are these horrible looking turtles. Teenage turtles. Teenage mutant turtles. Ugggh - Teenage Mutant Ninja Turtles. They're radical, they're retro, they're outrageous, and that's just the beginning. The Teen Turtles started out in life as a kids' cartoon show. Imaginatively named after your favourite classical artists, Donatello, Leonardo, Michelangelo and Raphael certainly have loads of class. This is doubtless the reason they are so incredibly popular. Or could it have something to do with marketing?

Whatever the reason, now they're everywhere.

Just walk into your neighbourhood K-Mart and you'll know what I mean. You can capture a Ninja Turtle doll for just $12.48. You can grab a Turtle party wagon for a mere $64.98. Best of all there's a blow-up Ninja Turtle Blimp - almost a metre long, and just $59.95. Ninja Turtle videos are much more reasonably priced, at only $19.78. Get the message? If you're not into Turtle-mania, then you're way out of style.

It comes as no surprise that Teenage Mutant Ninja Turtles have found their way into a computer game. No stone has been left unturned in the effort to part turtle-lovers from their hard earned cash. Make that their Dad's hard earned cash. The thing that IS surprising is the fact that the game is really quite good!

Available in Amiga, IBM and Commodore formats, *Teenage Mutant Ninja Turtles* is obviously a well polished game. The opening sequence is fast paced, with a bright and breezy sound-track - a feel that continues through the game. The Amiga version is supplied on three disks, promising plenty of action - I'm still struggling to get through disk one.

The aim of the game is simple. April O'Neil - whose name, by the way, is a registered trade mark of Mirage Studios, USA - has been kidnapped from her mobile news van by the vile and ruthless Shredder - whose name, by the way, is also a registered trade mark of Mirage Studios, USA. With their lovely cohort held captive, the fearless foursome set out to rescue her at all costs - not only that, they will do their level best to capture Shredder's Life Transformer Gun. The gun is the only way to turn their rat-friend Splinter back into the man he used to be. By the way - Splinter is also a registered trade mark of Mirage Studios USA.

Got it? Easy really, especially if you've had your daily dose of Ninja Turtles on the telly. As for me, I'm playing it by ear. The game opens to reveal a city street, viewed from above. My Teenage Turtle chum is controlled by my joystick, so I urge him towards an open man-hole cover in the footpath.

A pause for disk access, and we find ourselves in the sewers of New York.

These are no normal sewers - there are enemies galore. Now the action is in side-view, much like most "beat-em-up" style games. With Katana blade flailing, Leonardo cuts a swathe through the assembled hordes of Mousers, Roof Leapers and Foot Clan Soldiers.

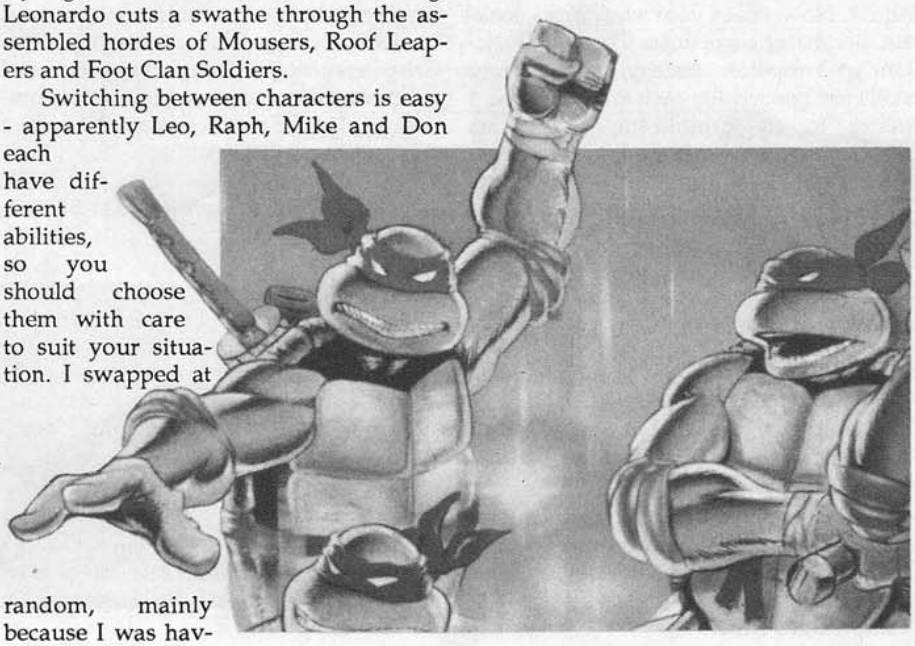
Switching between characters is easy - apparently Leo, Raph, Mike and Don each have different abilities, so you should choose them with care to suit your situation. I swapped at random, mainly because I was having too much of a good time to bother thinking in depth. Maybe I should have. After struggling through the sewers we managed to find April and her trademarked kidnappers, but unfortunately we didn't have the strength to beat off the final baddies.

Let me be the first to admit that I approached *Teenage Mutant Ninja Turtles* with a fair amount of cynicism. But what can I say? Graphics are fine, the sound track is boppy, and all in all I had a mighty fine time. This is one of those games that I dare not show my seven year old son - if he finds it, I can guarantee that he'll be glued to the joystick for days on end.

Teenage Mutant Ninja Turtles is distributed by Ozisoft (02) 313 6444.

RRP Amiga $69.95
C64 $39.95

And guess what? You can buy a copy at your nearest K-Mart. ❑



WINGS OF FURY

by Phil Campbell

THE YEAR IS 1944, and the world is at war. Europe and the Far East are ablaze with conflict, and the Pacific theatre is locked in a furious struggle. Slowly, though, the tide begins to turn. The skill and determination of the enemy proves no match for the allied forces.

History has it that a major factor in the allied victory was the incredible striking power of the US Naval Air Wing. Within the air wing, one plane stood head and shoulders above the rest - the mighty F-6F Hellcat.

Powerful and durable, the Hellcat could carry a payload of bombs, rockets or torpedoes. It could easily outmanoeuvre the enemy's best fighter planes, and it soon established one of the best kill-to-loss ratios in the war.

Want to fly one? If you've got an Amiga, *Wings of Fury* can put you in the pilot's seat.

Before you start you must choose your rank. The difficulty of the mission varies accordingly. Midshipman is fine for a few easy warm-up raids on a nearby island. Now select your weapons - rockets, bombs or torpedoes. These will dictate your mission strategy, and different skills are needed for each weapon type. I prefer to fly ground-hugging rocket raids, as my aim with the bombs is abysmal.

The game begins in earnest as your aircraft is hoisted onto the flight deck of your aircraft carrier, the USS Wasp. The Wasp fills the width of the screen, and you will be impressed by the detail of the graphics. There are rotating radar dishes, fluttering flags, and tiny crewmen rushing everywhere. The Wasp is under attack, and it's your job to protect her.

This is not your typical "view-through-the-window" style flight simulator - the screen shows the action in side view, with a horizontally scrolling landscape flashing below your plane. There are none of the usual flight-sim technical complexities either.

Taking off is a snack - point your nose down the flight deck, apply full throttle and climb as soon as you reach the edge. Landing is not quite so easy, but as I rarely end my missions alive the point remains merely academic. They call me Kamikaze Campbell.

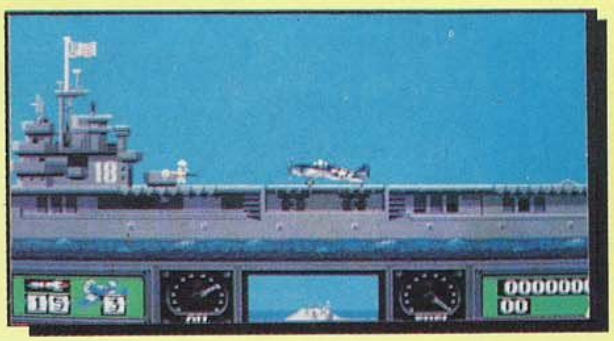
Cruising at low altitude, you will soon spot an island. And it's no place for a tropical holiday. Almost immediately, you are under fire from a ground based gun-emplacement. A well placed missile puts an end to the first bunker, but there are plenty more to come.

With practice, I have almost cleared the island. There are a few little red-clad soldiers still on the loose down there, waiting to be mopped up with a quick machine gun raid. I felt sorry for them, so I left them alone.

Enemy planes, however, are another story. Dogfight sequences are dramatic, they are fun, but I always lose. The manual promised that my Hellcat could outfly any enemy plane. I am finding this harder and harder to believe. Maybe my tactics need a little polishing.

Wings of Fury is an engrossing game. Crisp graphics - though simple - and good aircraft control make it quite compelling. If you're after some fun on a rainy afternoon, check it out.

Distributed by **Dataflow** (02) 331 3665.
RRP Amiga $69.95. ❑



Ivanhoe

by Luke Tattersall

THERE IS A certain romance and appeal about the idea of knights in shining armour and the crusades. Fighting for what was true and right, defending the Crown, doing all for King and country. A new game from Ozisoft called *Ivanhoe* takes you back to those times.

The opening screen shows the face of Ivanhoe with his trusty sword moving slowly across the screen - the sombre tone of the opening music lets you know that you are in for a serious mission.

Your task is to rescue King Richard (the rightful heir to the throne) from the evil clutches of King John. Richard is being held prisoner in a castle in Austria. You, however, must begin your mission in England and make your way to Austria to rescue the King.

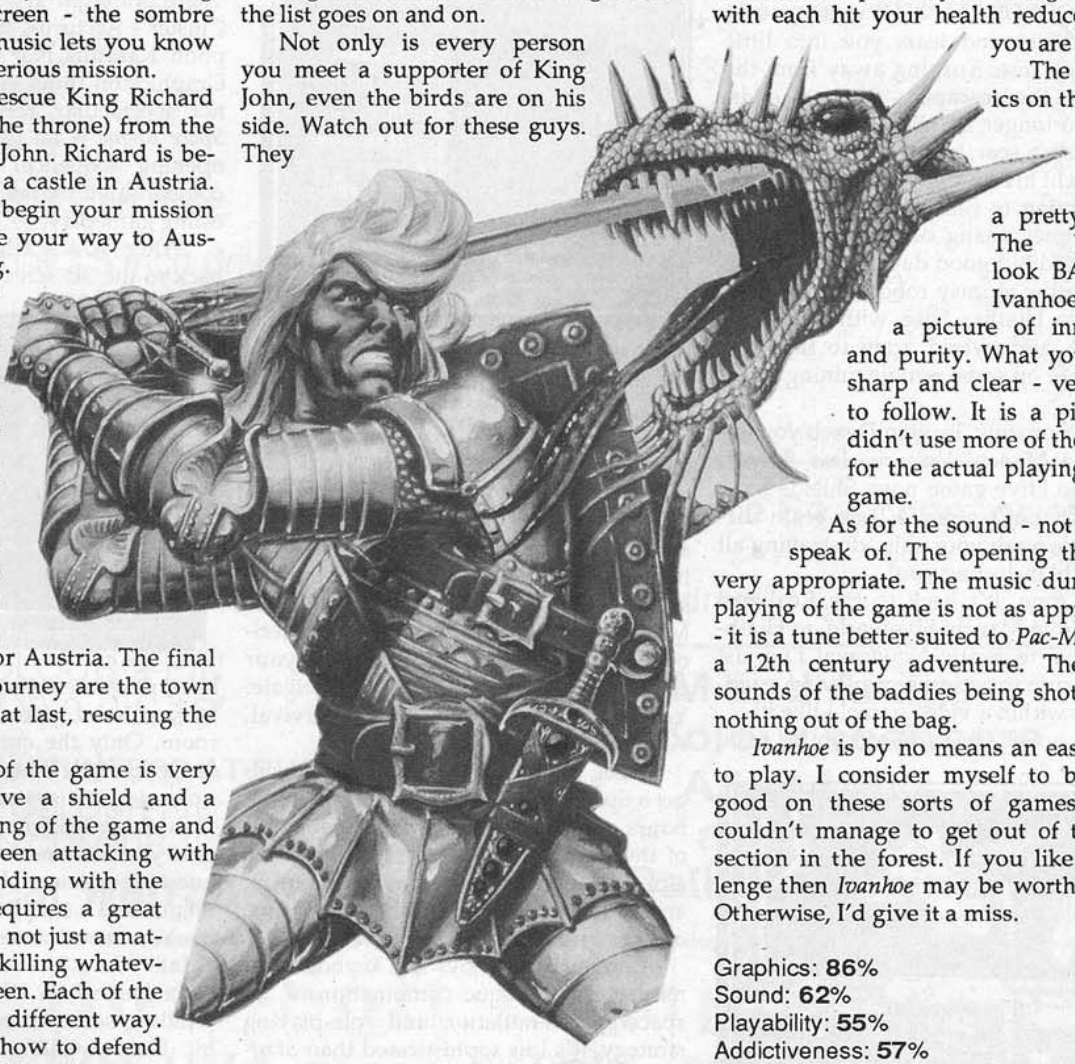
The game has five levels - each a different section of your journey to rescue the king. You begin in the forests of England and must make your way through the forest and then travel by boat to France. Once in France there is no time to rest and you must head straight for Austria. The final two stages of your journey are the town in Austria and then, at last, rescuing the king from the castle.

The actual play of the game is very challenging. You have a shield and a sword at the beginning of the game and must alternate between attacking with the sword and defending with the shield. The game requires a great deal of patience - it is not just a matter of rushing in and killing whatever appears on the screen. Each of the attackers works in a different way. The skill is learning how to defend yourself with the shield against each of their different styles.

Along the way you can pick up more effective weapons and a shield that offers greater protection. These don't last too long so you need to make the most of them.

It appears King John has a lot of supporters and you seem to encounter MOST of them as you make your way to the castle in Austria. There are Barbarians who try to beat you to death with clubs. Archers, both on the ground and hiding in the trees, firing arrows. Axe hurling mad-men, soldiers, magicians - the list goes on and on.

Not only is every person you meet a supporter of King John, even the birds are on his side. Watch out for these guys. They look innocent as they sit up in the trees but they can swoop at any time. If you manage to kill them they immediately turn into a roast on a plate (nice little twist).



As you view the game the top half of the screen is the play section and underneath there is a bar showing the "status" of the game. Here you can see how much time you have left on that section, how many lives you have, the score and any extra weapons you are carrying. This bar also shows your health as well as the health of the person you are fighting (ie, with each hit your health reduces until you are killed).

The graphics on the game a pretty good. The baddies look BAD and Ivanhoe looks a picture of innocence and purity. What you see is sharp and clear - very easy to follow. It is a pity they didn't use more of the screen for the actual playing of the game.

As for the sound - not a lot to speak of. The opening theme is very appropriate. The music during the playing of the game is not as appropriate - it is a tune better suited to *Pac-Man* than a 12th century adventure. The usual sounds of the baddies being shot etc are nothing out of the bag.

Ivanhoe is by no means an easy game to play. I consider myself to be fairly good on these sorts of games and I couldn't manage to get out of the first section in the forest. If you like a challenge then *Ivanhoe* may be worth a look. Otherwise, I'd give it a miss.

Graphics: **86%**
Sound: **62%**
Playability: **55%**
Addictiveness: **57%**
Overall: **57%**
Great graphics, but not much else.
Review copy from **Ozisoft**
(02) 313 6444.
RRP **Amiga** $59.95 ❑

SPACE ROGUE

by Greg Munro

Feeling like a bit of 3-D space action with a dash of strategy? Feeling like the confusion of three levels of reality? Check out ***Greg Munro's*** *sometimes confusing assessment ...*

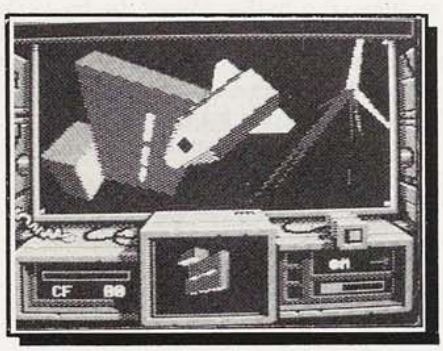
A HIDEOUS MANCHI grabs you in his mandibles and tears you into little pieces. You lose. Turning away from the machine, the escapist fantasy ends. You're no longer an elite Imperium Star Trooper on a search and destroy mission to a Manchi hiveworld.

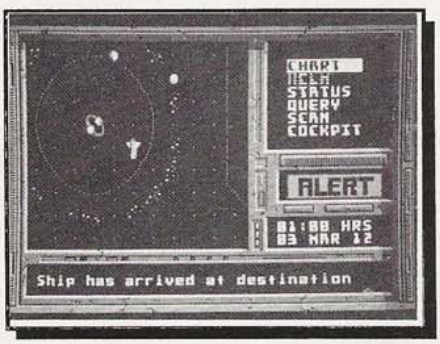
Returning to real life, you don your space helmet, (hang on - did I say real life!!??), and bid good day to the barkeep. Avoiding the clumsy robot in your way, you leave Hiathra base with a load of souvenirs and hybrid grain to flog at a hefty profit on some remote mining asteroid.

Unfortunately, leaving Deneb you encounter a Manchi Vulture class fighter. This is no Hive game now. Shields have failed. Armour's gone. A laser beam slices right through your ship, destroying all in its path, including you!

This time, it's back to the Real real world. From Manchi hiveworld, to Hiathra cantina, to exotic Newtown! I've just had the cute experience of playing a video game within a video game! I like it!

This novel series of concentric realities comes courtesy of Paul Neurath, creator of *Space Rogue*, a game which somehow got confused back in the June issue with a cosmetic for lady astronauts! *(No wonder I'm feeling red in the face - Ed)*





You take the lead role in this imaginary world of the "Far Arm Star Cluster". Not that you were always a rogue of course. You once had a promising career as a junior officer on the Princess Blue, an impressive merchant ship that is now just space cinders. You alone survived the Manchi attack, marooned in the mysteriously deserted small Sunracer ship your captain had stopped to investigate. You've got no clear goal except survival. And revenge.

Later, other goals emerge, like how to get a Space Pilot's licence, and after many hours of gameplay you start to get a hint of the overall aim. You can achieve this aim, Mr Neurath assures me, by choosing any of three career paths: Trader, Pirate, or Bounty Hunter.

Gameplay (via joystick, keyboard, or mouse), is a unique combination of 3D spaceflight simulation and role-playing strategy. It's less sophisticated than *Starflight* (see April *ACAR*), but with the added bonus of arcade action in 3D filled-vector graphics like *F/A-18 Interceptor* or *Carrier Command*.

Switching from the 3D screen to the navigation panel gives you a map of the current star system, divided into 1024 sectors in a 32X32 grid. Superimposed on this are symbols representing nebulae, planets, starbases, outposts, mining stations, asteroids, ion storms, stargates, etc.

By scrolling around you may select your destination within the star system. There are eight systems in the Far Arm Cluster - Arcturus, Bassruti, Deneb, Gryphon, Karonus, Nar'see, Sigure, and Zed. Graphics on these intra-system maps are not spectacular, reflecting the fact that *Space Rogue* is an IBM port (as does the opening sequence), but this is amply compensated by the 3D action and interesting gameplay.

When you reach a base, you switch back to the 3D screen to dock. Inside the base, movements are viewed from above, as you steer your man from room to room. Only the current room is shown. Here you buy and sell cargo, repair and upgrade your system and weapons, play "Hive", and talk to sentient beings. Some give you information, useful objects, and quests to attempt. Interaction is through menus and a simple parser.

You travel inter-system by entering "Malir Gates", which deposit you into "wormholes". A Wormhole appears as a winding series of concentric rings. It's a bit like travelling through a vacuum cleaner tube. A faulty jump will deposit you back at the gate you entered. This is annoying because corrosive gases within wormholes eat through your hull. Long wormholes cause lots of damage. It's a juggling act between going fast enough

to minimise hull damage and slow enough to safely stay within the wormhole.

Space Rogue comes with lots of paper bits - two booklets, an instruction summary card, a Starmap, and a cute advertising pamphlet for "Hive". It's not disk-copy protected, but you must enter passwords from the manual.

Space Rogue is witty, imaginative and well thought out, with just the right achievement to frustration ratio to keep you coming back. An excellent game.

Distributed by **Dataflow**.(02) 331 6153
RRP Amiga $69.95.
C64 $69.95

Ratings:

3D Graphics: 79	Other Graphics: 65
Sound FX: 51	Playability: 81
Addictiveness: 85	Instructions: 95

Value for money: 70 (slightly pricey)

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QUICKSHOTS

A first glance at new games ...

F - 29 Retaliator

● *Retaliator* is a flight-sim program based on two of the most advanced aircraft designs ever conceived. Not only do you get to fly the Grumman F-29 with its revolutionary forward swept wings - you can also put the new Lockheed F-22 tactical fighter through its paces.

Neither of these fighters are actually in use yet - both are contenders as replacements for the aging fleet of US Air Force F-15s.

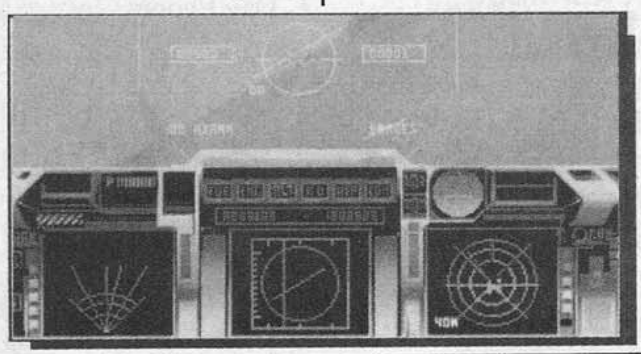
Both planes were designed to the same performance specifications - both feature STOL (Short Take Off and Landing) capabilities, Stealth technology for radar invisibility, and the ability to cruise at supersonic speeds without after-burners. In other words, they're fast, they're invisible, and they can take off and land on a postage stamp.

Strap yourself into a comfortable chair, grab your joystick and get ready for action. First you'll need to enrol on the Air Force computer - select a rank, from First Lieutenant through to Colonel. The higher the rank you select, the greater the variety of missions - and the harder they are. I chose First Lieutenant, though Apprentice Flight Mechanic would have been a better match for my ability.

Now choose a base location. You can start with a test flight around the Arizona Test Range, or get straight into the action in the Middle East, the Pacific, or Europe. Each zone features a number of missions - there are more than 60 to choose from by the time you reach the rank of Colonel. This game will keep you going for years!

Enough paperwork. It's time to fly. Fire up the engines, open the throttle, and in a flash I'm airborne. They're not kidding about the short take-off. Graphics zip by the window at an alarming speed, the engine of my plane roars in my ears ... exciting stuff. Now to get my teeth into Mission Number 1 ... two bandits in Sector 4-D are closing in on my island base. It's up to me to "engage and destroy." Will I win? Or is it "Purple Heart" time for Phil? Stay tuned for a full report in the next issue.

Distributed by **Ozisoft**
(02) 313 6444
RRP Amiga $59.95
Quickshot Ratings:
Gameplay: 8/10 Graphics: 8/10
Sound: 8/10
Overall: 85% Action: 9/10



E - Motion

● If you're tired of the playing the same old stuff time and time again, here's something different. Relatively different, anyway. Yep, it's a game based on the theory of relativity - the "E" in E-MOTION is "E" as in "M-C squared."

Before you hang up your hat and go home, it's not as fearsomely intellectual as it sounds. All you've got to do is pilot an atom-sized ship around E-space, pushing coloured sub-atomic particles into one another. The trick is to bouncing matching particles together, making them disappear - if spheres of different colours come into contact, they generate a third particle which must also be destroyed. The idea, you see, is to clear the screen. If you're not careful you'll set off a chain reaction - you may have only started with four particles on the screen, but you'll soon find you've created heaps more.

To complicate matters even further, some of the spheres are joined by elastic bonds - push one, and it's little friends will tag along. Then there are the energy pipes, which both your ship and the spheres will bounce off if you come into contact.

Your ship is not particularly easy to control - it's one of those "point and thrust" models made popular in games like the ancient *Asteroids* - pushing your joystick left or right rotates the ship, pushing the fire button fires the thruster rockets. Gently does it - I spent most of my time trying to get the silly thing to go where I wanted it.

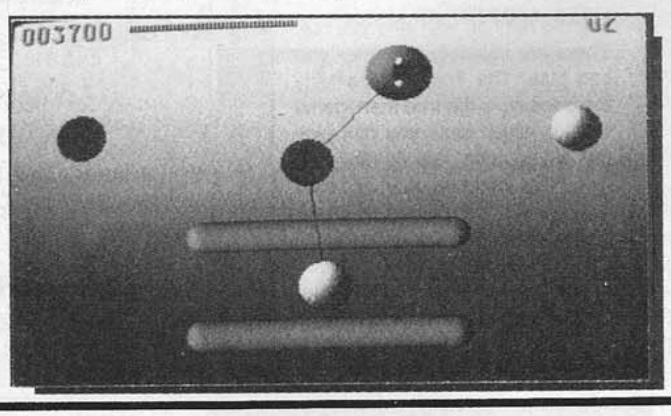
Graphics are simple but elegant - on the Amiga the spheres are ray-traced, which gives them a genuine 3-D appearance. Colours are nice, and the overall design is quite elegant. One look at the screen is enough to tell you that this is a game that requires thought and control rather than brainless reflexes - on higher levels you will need to be quite strategic. Sometimes, for example, you will actually need to bounce balls together to produce enough to let you finish the level - remember, you need at least two of every colour to let you zap them together.

E-motion is an enjoyable and unusual game - a pleasant game if you need a break from zapping aliens and shurikening Ninja warriors.

Distributed by **Ozisoft.**
(02) 313 6444

RRP Amiga $59.95
C64 Disk $35.95
C64 Cass. $26.95

Graphics - 7/10
Sound - 7/10
Action - 7/10
Gameplay - 7/10
Overall - 73%



The Magic Candle

● Bumpf is a technical term. Bumpf is un-necessary, un-requested literature generally of a technical nature that arrives in copious quantities. And never before have I received so much bumpf with a game. The game I am referring to is *The Magic Candle*, a fantasy role-playing game for the C-64.

Some of the bumpf was inside the box, some outside. First, there was the pile of photocopied reviews from overseas magazines. It was over a centimetre thick, and without exception they were rave reviews. Nary a negative word among them.

Then there was the bumpf that was actually attached to the box - little stickers everywhere, proclaiming *The Magic Candle* as "1989 Role Playing Game of the Year" and "1989 Best PC Fantasy Role Playing Game." The box, in fact, reminded me of Norman Gunston in his hey-day.

Open the lid and the paper warfare continues - a map of the Land of Deruvia, an instruction sheet, and a beautifully produced 60 page booklet.

But what about the game itself? Supplied on two double sided disks, there's obviously a lot to do! Graphics look ok, and follow the accepted RPG standard. This one is too complex to rate, so watch out for a full review soon. In the mean time, here's a quote from some bumpf - "There's enough variety in *The Magic Candle* to keep players thoroughly interested throughout the approximate 200 hours it will take the intermediate gamer to finish. Whether you're an expert or a novice, this magical world will charm you into many hours of enjoyable play."

Distributed by **Mindscape**
(02) 899 2277
RRP C64 Disk $49.95

Crazy Shots

by Luke Tattersall

If you've got a Westphaser light gun and you're sick of playing cowboys and indians, this is the game for you. It's a heap of fun. Rather than being set in the wild west this one is set in "Side Show Alley". You get to choose from a number of different targets like balloons, targets and wild animals.

All except the Bull's Eye target are moving and all of them really test your skill with the Westphaser gun.

You are left in no doubt as to where your shot went as it shows up on the screen. (Remember, if you move around you will need to re-callibrate the gun by pressing the F5 key).

For my money this new addition to the Westphaser collection has some significant improvements on what was already a good game. A larger section of the screen is used for the target area. In Westphaser you could only shoot at a small part of the screen.

The second improvement is that *Crazy Shots* offers more variety. Some parts of the game simply involve accuracy, while other parts have you relying on your reflexes.

The third improvement, and quite an important one, is that you are not shooting at people. The only "live" targets are animals, which I reckon is a lot better than shooting at other people, even if they are only computer animations. (Hope there are no animal libbers reading this!) The fact is, there's been quite a lot of debate about excessive violence in computer games - but few people would complain about *Crazy Shots*.

The sound track that accompanies the game is a little carnival tune that is very appropriate to the setting. The other SFX are very good, and include authentic sounding jungle noises when you are hunting the wild animals.

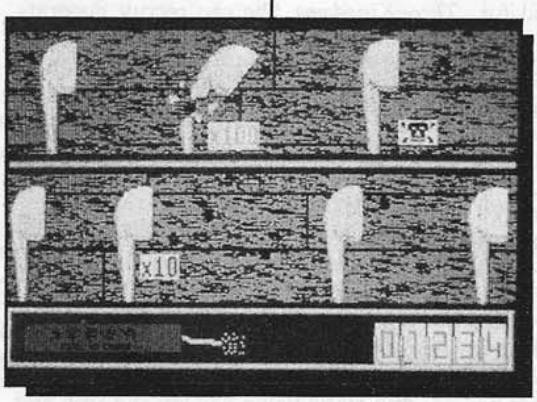
Visually the game is very attractive and eye-catching. The spruiker on the stand is a little, balding fat guy just like you'd expect to see at the Royal Easter Show.

Crazy Shots is the sort of game you could get your mother to play without much hassle. Smaller kids (6+) would also get a kick out of it, and should be able to play the game without much fuss or assistance.

All this adds up to an all-round classy game - good to look at, easy to play, lots of nice touches. I'm sure I will be coming back to play it often.

Distributed by **Pactronics**,
(02) 749 4700.

RRP: $49.95
Quickshot Ratings
Graphics 8/10
Sound 6/10,
Gameplay 7/10,
Addictiveness 7/10.
Overall 75%



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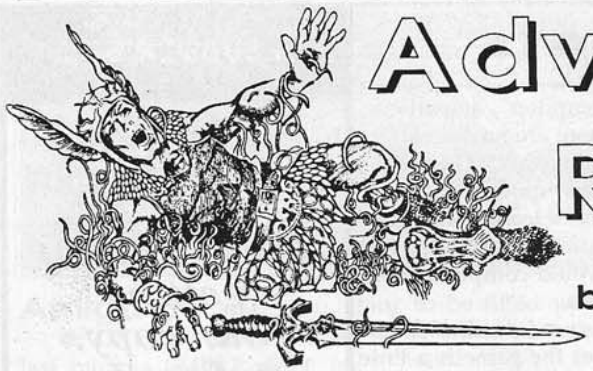

Adventurer's Realm

by Michael Spiteri

Welcome to Adventurers Realm, the section of the magazine especially for adventurers, wargames and role-players. The Realm offers help in the form of hints and hint sheets, and if you're still stuck, we'll print your problem for others to think about.

The address to write to for adventure game hints and problems, hint sheets, and general chat is:

Adventurers Realm: P.O. Box 351, Pakenham, Vic 3810

The address to write to for role-playing game problems is:

The Dungeon: P.O. Box 315, Maddington, W.A. 6109

The address to write to for wargame queries is:

Realm's Wargaming c/o Barry Bolitho
P.O. Box 351, Pakenham, Vic 3810

Always enclose a stamped addressed envelope for any replies

Free hint sheets

● Thanks to all who have sent in hint sheets to be made into Official Realm hint sheets. Some can be included as is, others have to be sorted and edited. Keep them coming in, though!

The following hint sheets are free. You can choose up to four hint sheets of your choice. You must include a stamped addressed envelope - otherwise we won't send you any!

For your free hint sheets write to:
Free Hint Sheets: P.O.Box 351,
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- The Pawn
- Borrowed Time
- Never Ending Story
- ZZZzzzzzzz
- Zork 1
- Zork 2
- Zork 3
- Deja Vu
- Dracula
- Fish

Psst! Watch out for the Official Adventurers Realm Hint Book - available in a few months ...

Problems, Problems and more Problems (or the Troubled Adventurers Dept)

● Adventure games have the awful habit of turning a friendly human being into a raving, negative-vibe merchant. Especially the games with tricky problems. The people listed below have become such, and they are in desperate need for help, so if you can assist - please do!

● First up is Craig Power of Keparra in Qld. Pro-Pack adventures are still troubling him. In *The Temple Curse*, how do you get the branch and how do you get into the temple? Then in *Island of Spies*, how do you untie the parachute to crawl out from under it? Finally, in *The Last Planet*, how do you stop the little green man from killing you?

● Michael T. Mitchell of Woodville West in SA is stuck in *Bloodwych*. In the Serpent Tower Level 4, Mike cannot find the key which is uncovered by pressing the green switch. In *Dragon Tower* Level 3, how do you get past the pillar controlled by the floor switch?

● Sue Martin of Clayton in Victoria is romantically stuck to *Romance of the Three Kingdoms*. She can recruit generals okay, but is having a great deal of trouble recuiting soldiers. Obviously generals are pretty useless without soldiers, so can anyone help Sue out?

● A.J.Barnard of Epping in Victoria is currently stuck in C64's *Detective*. The list of problems are as follows:

a. How do you open the safe?

b. How do you use the plans to the secret passages?

c. What does Bismuth mean?

d. Where is McFungas's body and his room?

● Natalie Paine has left the ants and their desert to have a pondle with *Tass Times in Tonetown*. She asks the following questions:

a. Where is the metal card?

b. What is the editors name?

c. How do you exactly use the terminal?

d. What is inside the silver painted jar?

● Colleen Betts of East Geelong in Vic is stuck in *Legacy of the Ancients*. She cannot find Magic Ice. She also having problems making it through the dungeons. Any help appreciated!

● Mr & Mrs Kearns of Elizabeth North in S.A. are stuck in *The Boggitt*. No matter what they do, they always die of starvation. The Kearns also ask if anyone knows where *Rebel Planet* can be purchased from?

● Scott Robinson of Bundarra in NSW is another victim of Commodore's Pro-Pack adventures. In *Temple Curse*, how do

you read the hieroglyphics with the translator, and where do you go after you collect all the items? The in *Last Planet*, Scott is also being troubled by the little green man! Another game Scott is stuck in is *Battletech*. He's up to the Star Map Room in the Star Fleet Base, and want's to know how to get any further.

● John Fardy of Revesby in NSW is stuck in the Riddle Room in *DungeonMaster*. He has triggered a trap, and cannot unlock the door with any of they keys or get past the magic barrier in front of the grill.

● Obtaining a book is Paul Valentines (of Boondall, Qld) problem in *The Hound of the Shadow*. Any takers for this pageful problem?

● Last, but not least, is Scott Pitcher of Reservoir in Victoria. In *Savage Island Pt 1*, how do you get all the objects out of the lake without drowning?

Questor Adventurer of the Month

● This is where you can win yourself some free software from the generous guys and gals at Questor. If you think you are worthy of the title role of Adventurer of the Month, write it!

This month's choice was a hardy! Close runners up were Chris Kaiser of Spearwood in WA, who helped out a few adventurers this month, as well as sending in a *King of Chicago* hint sheet. Then there was Stephen Burrows of Kootingal in NSW who sent in hint sheets for a few of Sierra's games. Not forgetting David Marjanovic of Revesby, NSW who sent in the answer sheet to *Shadowgate*. However, the winner is ...

Stuart Elflett of Toogoolawah in Qld who dug in deep to send in solutions to many games, as well as pages and pages of hints and tips.

Realm's Clever Contacts

Two more clever contacts this month: (a complete list coming shortly).

● Name: Ryan Tan
● Address: 21 Albion St. Concord NSW 2127
● Phone: (02) 743 6428 No reverse charge calls, thanks!
● Help offered: Most games!!

● Name: Scott Pitcher.
● Address: 13/176 Rathcown Rd. Reservoir, Vic 3073
● Help offered: *Adventureland, Pirate Adv, Mission Impossible, Voodoo castle, The Count, Strange Odyssey, Mystery Fun House, Pyramid of Doom, Ghost Town.*

Help, Help and more Help (or the Smart Adventurers Dept)

● Boy! Help and hints have been pouring into the Realm at an alarming rate. On behalf of all the stuckees, thanks to all the saviours!!

● Game: *Future Wars*
● For: Jon Dickins
● From: Noel McAskill & Duuk Tsarith
● Help: Operate green button; use sheaf of paper on opening; operate red button; take documents; move to lighted circle on floor.

Natalie Paine was stuck quite badly in *It Came From the Desert*. Well, three people wrote in to help Natalie. Credit goes to Chris Kaiser, Jozsef Toth, and James Connors. Here is the help ...

The queen's nest is south of the South-West volcanic cone. He can enter it if he travels by tank. Walking burns!!! The tank has unlimited fuel. The man at Neptune Hall is Billy-Bob, head of Neptune Cult who is accused of murdering his daughter's best friend. The red-haired girl is Jackie (daughter of man at Neptune Hall) - keep away from her - she's trouble. If she presents evidence to the mayor, the major will call out the alert. If that doesn't happen, it's because your evidence is false. On day 4, go and pick up your lab results. This should be enough evidence. The mayor will finally believe you when the ants eat his car.

● Game: *Leisure Suit Larry 3*
● For: Luther Teng
● From: Chris Kaiser
● Help: At the start of the lookout platform, look at plaque then look through telescope. After leaving that area go to your home. In the jungle scene after leaving your home, go and pick up the wood. Go to the hotel casino and at the entrance go just past the stairs to where the change rooms are. Get the rope and soap from the sink.

● Game: *Defender of the Crown*
● For: Luther Teng
● From: Chris Kaiser
● Help: If you are surrounded by enemies or if you need more land, hold a tournament and joust for land. When you conquer land, try to win their castle.

● Game: *Rocket Ranger*
● For: Luther Teng
● From: Chris Kaiser
● Help: On the Zeppelin, say "You are on a mission from God" or "You flew without a plane".

She will say "Great! A comedian".

You say "You'll never believe me".

After they are kidnapped, later in the game you will need to say: Miss Barnstorff: "About time you got here Mr Hero" You: "You will be happy to leave", "You will be happy to help"

She will say "We could have been killed", You say "Let's head for home".

● Game: *Detective*
● For: Neville Hewlet
● From: Ben Gosling
● Help: When you start, wait a while then follow Bently to your room. Go up to the drawers, click joystick, and use command which looks like open box, and take padded envelopes. Then go to Dingle's room. If no death music comes, go to the drawers and get briefcase. If death music does come, do the same thing but search Dingle before you leave. Open briefcase, take out note and place in padded envelope.

● Game: *Leisure Suit Larry II*
● For: Susan Dawson
● From: Brett Mirabella
● Help: To open the lift in the Volcano, you must have the airsick bag from the aeroplane and matches from the guest room at the island that you go to first. You must also have the hair rejuvenator from the barber shop at the airport. On the volcano, near the crevice you must put the bag in the bottle then you must light the wick and throw the bottle into the crevice. The door should open.

● Game: *Pool of Radiance*
● For: Eddy Cheung
● From: Damian Maher
● Help: To clear the land of Sokol Kepp, go to the southernmost wall in the building at the centre of the keep and there you will find an altar. Approach the altar and you will see the spectre. Tell him the truth about Phlan and he will give you a password to give to the undead patrols. Return to the city clerk and you can collect your commission for clearing the keep. Also to get more money go to a tavern and gamble. If you lose money, immediately play again and bet either more money than you have....see what happens.

● Game: *Shadowgate*
● For: Andrew and James Dickson
● From: D. Marjanovic and J. Fardy

● Help: The rope is magical - try talking to it! The word on the wall will help. To get the Cyclops, act like David and Goliath and use sling with stone. The stones are near the waterfall. To get the flute you need the steel glove. Operate the well and examine the bucket. Once you have the flute, play it! What you get fits into the hole in the King's room. With the wand, go back to the bridge, remove excess gear and cross it. Try out the wand on the snake.

● Game: *Personal Nightmare*
● For: Steve Morgan
● From: Duuk Tsarith
● Help: The safe can be opened by reading the date on the painting.

General Hints & Tips

Courtesy of Stuart Elflett

● *The Helm*: Pick the lock and you'll be in the castle. It'll make a mess of the needle, though.

● *Dallas Quest*: Go down the ladder with the flashlight, turn it on, and drop it. Go east, then south. Put all necessary objects into the knapsack, then close it. Go down the ladder, get torch, and continue your journey.

● *Hitchhikers-Guide:* When you materialise in your own brain, the game ends five moves later. Keep a couple of saves. Vogon Hold - if the Vogons are shooting you, you've already got it. Don't worry. The plant pot is in the whale.

● *Starcross*: The green rod is in the bin, in the garage.

● *Castle of Terror*: The flint is found in one of the barrels.

● *The Hobbit* (Tape version): To open the side door, use the small curious key . To kill the dragon, use Bard to shoot it.

● *Suspended*: Iris isn't just being difficult, she needs a small repair before she can help, and she isn't programmed to go far from the monitors. Cheap robots on wheels cannot go up steps, maybe a ramp would be more suitable.

● *Subsunk*: To clean the sink you may have to plunge in at deep end. Butter makes a good lubricant for aerial manoeuvres.

The Dungeon

by Kamikaze Andy

● Established RPG house SSI are now publishing the Amiga as its No. 2 computer for products (after IBM), and that's great news! Recently released was *Champions of Krynn* (a fantasy RPG in the AD&D DragonLance world), and *Sword of Aragon*, a more strategic RPG. Expect *Pool of Radiance* soon!

Another firm that has upgraded its Amiga priority is Sierra. *Heroes Quest* was the first fantasy RPG/graphic adventure to be released, and now a sequel *Heroes Quest II* is expected early next year. Sierra are also about to release a game called *Codename: Iceman*, a thriller adventure, and *Conquests of Camelot*, which also features RPG characteristics and is set in the period of King Arthur. Unfortunately, Sierra does not support the C64 at all, due to the limitations of the machine in handling Sierra's advanced game system.

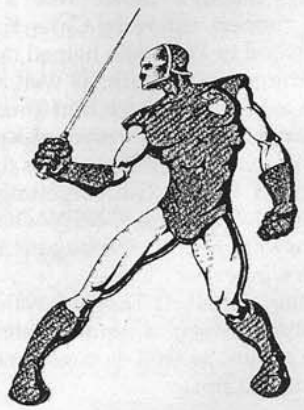
Some other titles that will grace the shelves of your local software store soon include *Damocles*, the sequel to the great *Mercenary* (Amiga only). Also out is *Final Battle* (sequel to *Legend of the Sword*), and *Cadaver*. Both games are isometric RPG's and feature lots of puzzles, monster bashing, spells, and gorgeous graphics (again, both are for the Amiga).

For the C64, Interplay are to release the official *Lord of the Rings*. This will be an officially licensed RPG (not a sequel to the Melbourne House adventures), and early reports suggest another Interplay hit. Both Amiga and C64 owners should look out for *Magic Candle II*, and a series of adventures under the label *Worlds of Ultima*, and using the technology of *Ultima VI*.

Finally a comment on roleplaying and adventuring in general. Some of you may notice that the majority of items in this month's Dungeon segment are for the Amiga. Unfortunately for C64 owners, the adventure and RPG market is influenced by the computer market, and current trends show the Amiga to be way ahead of the C64 in terms of potential and current software sales, and also in sales of adventure/RPG's.

You might be interested to know that the Amiga is coming a close second to the IBM, so maybe it's time for the hard-core C64 adventurers and RPGer's to upgrade. It is almost assured that all future adventure/RPG releases will come first on the IBM, then be converted to the Amiga, and possible the Mac. Companies like Infocom (or what's left of it), Sierra, and Lucasfilm already produce software for the IBM and Amiga, and soon more companies will follow the trend.

It all boils down to economics and profits, and of course, the C64 just cannot fit the new improved gaming systems that require greater graphic capability and more memory. ❑



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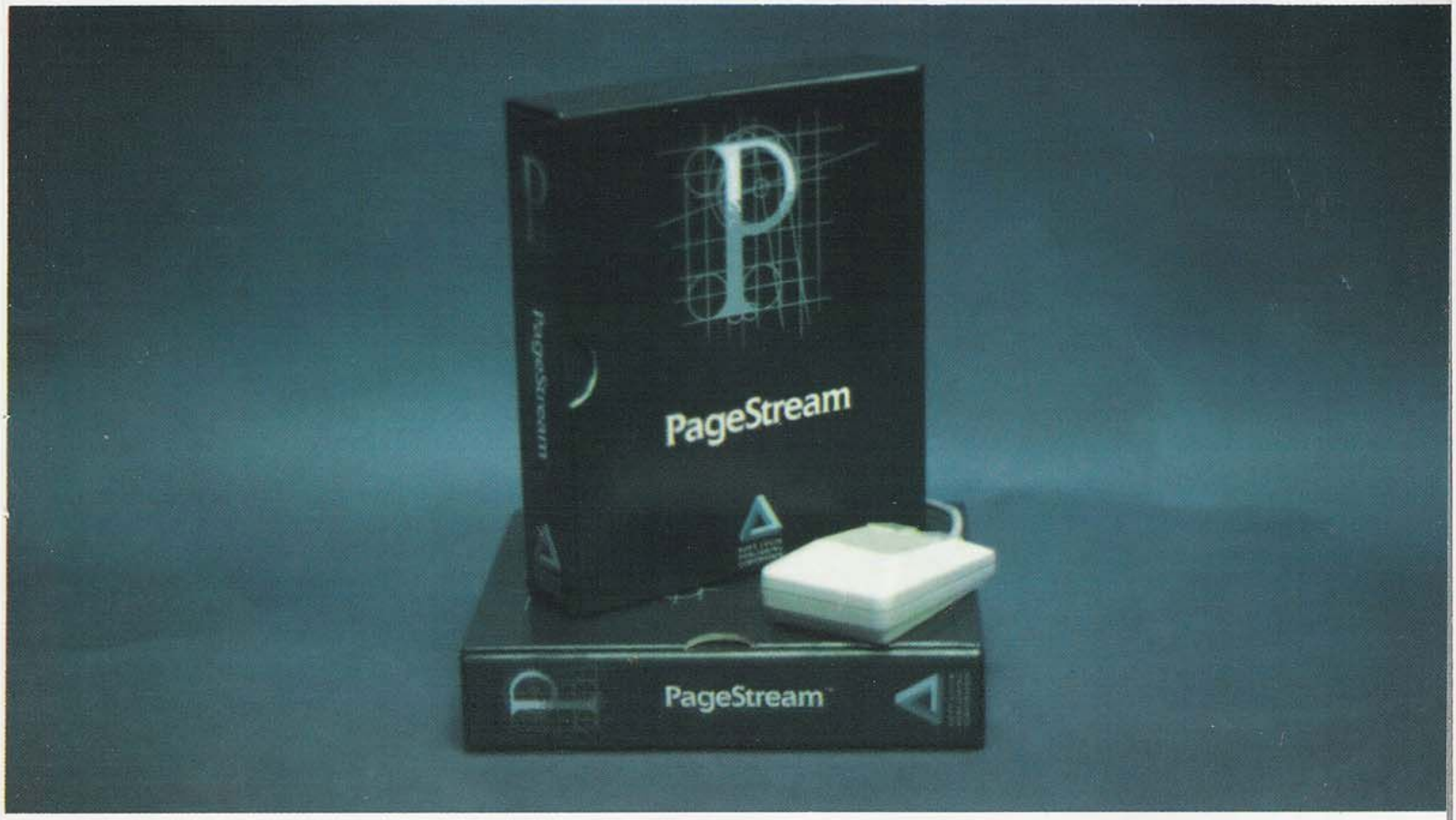

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